IDENTIFYING AND HANDLING BLACK SPOT IN TRANSPORTATION ENGINEERING (BATU GAJAH TO TAMAN MAJU ROUTE)

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CIVIL ENGINEERING
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Identifying and Handling Black Spot in Transportation Engineering (Batu Gajah – Taman Maju Route)

By

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Dissertation submitted in partial fulfillment of
the requirements for the
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CERTIFICATION OF APPROVAL

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Approved by,

(AP Dr Madzlan Napiah)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own expect as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

NAIZATUL AKMAL BINTI ABDULLAH

ABSTRACT

Malaysia now experienced a rapid growth of economy and population. As the population grows, the numbers of vehicles used on the road will also increasing. Too much vehicles on the road causing lots of accidents and black spot area will exist. Batu Gajah to Taman Maju route is always busy especially during peak hour. The traffic is varying from motorcycle to large trucks. The existence of these large vehicles and road constructions along the road prone to cause accident.

The objectives of this study are to identify the characteristics of black spot area and at the same time identify black spot area along Batu Gajah to Taman Maju route. It will be focused factors causing black spot, existed black spot area along the route and how to handle the area identified. The methods that will be use in this study are survey based methods such as questionnaires and interviews as well as data collection from police department and spot speed study. The result of this study will be presented in forms of tables, charts and graph.

ACKNOWLEDGEMENT

In the name of Allah, the Gracious, the Merciful, I would like to thank Him for giving the strength, skill, knowledge, patience and good health in producing this report. The greatest pleasure in writing such report is when it comes to acknowledge the efforts of many people whose names may not appear on the cover, but without their hard work, cooperation, support and understanding, producing this report would be impossible.

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CHAPTER 1

INTRODUCTION

1.0 CHAPTER OVERVIEW

This report describes a project called Identifying and Handling Black Spot in Transportation Engineering (Batu Gajah to Taman Maju Route). This project focuses on possible and existed black spot area along the route and how to handle the area identified. This chapter describes an overview concept of study. Then, the problem statement which leads to this project to be proposed is described. This is followed by the project objectives and project scope of work.

1.1 BACKGROUND STUDY

Road accidents in Malaysia are not a new issue to Malaysian. This issue always becomes a major issue to the government. Malaysia's government had identified some steps and initiatives to identifying and prevents the accidents. One of the initiatives is by launching a program called "The National Blackspot Programs".

Identifying the black spot area or accident prone area is important in helping reducing accident rate on Malaysia's road. Road safety research and scientifically driven initiatives such as black spot study have been recognized as the critical success factors of the safety investments in Malaysia. In addition, a new road safety department was recently set up to specifically plan, coordinate, implement and evaluate the safety interventions in the country.

1.2 PROBLEM STATEMENT

Traffic accidents in Malaysia have been increasing at the average rate of 9.7% per annum over the last three (3) decades. In the year 1996, the Malaysian government established a 5-year national road safety target to reduce road accident deaths by 30% by the year 2001.

Along Batu Gajah to Taman Maju route, there is lots of construction work in progress as the Public Work Department Malaysia (JKR) now upgrading the road. The tools used in the construction such as the barrier that dividing the lanes somehow turn to be threat to road user. This is one of the factors that contribute to accident prone area or black spot area.

The rapid growth of Lumut, the area along the route (Batu Gajah to Taman Maju) and the existence of learning institution causing the growth of traffic volume. The increasing in traffic volume reducing the speed while travel and causing stress makes the driver loosing focus.

1.3 RESEARCH OBJECTIVE

The main objectives of this research are as follows:

a) To address the issue of "HARRS" or high accident rate road section also known as black spot.
b) To identifying the characteristics of area that can be considered as black spot area along Batu Gajah to Taman Maju route.
c) To find ways how to overcome and prevent the cause of accident at the identified black spot area along Batu Gajah to Taman Maju route.

1.4 SCOPE OF RESEARCH

The project will provide a detail description on the characteristic, the requirement and how to handle the problems occurred at the black spot area. This will be done through the literature review on journal papers, conference papers, reference books, browsing through the websites and so on. Besides that, the characteristics of black spot area along the Batu Gajah to Taman Maju route also will be studied through a survey-based methodology.

This study will be focused on the factors that caused black spot area or accident prone area such as road obstacle, traffic volume, types of vehicles, types of drivers and so on. Accident data will be collect from "Royal Police Malaysia" or PDRM. To study the road condition, the original design drawing from "Public Work Department Malaysia" (JKR) will be studied.

As for data collection and analysis, several methods will be use to get as much information as possible. Among the possible methods that can be use in identifying black spot studies are spot speed study, volume studies and traffic counting.

CHAPTER 2

LITERATURE REVIEW

2.0 CHAPTER OVERVIEW

This chapter will review the factors that cause accidents and how it can be identified as black spot area. The factors that causing road accidents and what actions should be taken to overcome these problems as well as some research published that enhance the implementation of black spot study in Malaysia will be briefly described. Finally, this chapter will narrow down its focus to the implementation that is going to enhance the awareness, the perception and level of knowledge among road user about preventing accidents.

2.1 OVERVIEW OF BLACK SPOT

Accident-prone location, also called Black Spot, means the road section or intersection where traffic accidents is outstanding. The first and most critical step of improving road traffic security is to determine the locations of the road sections and intersections that need urgent improving, so as to prioritize the order of importance and urgency, and adopt reasonable measures to enhance road traffic security level.

Black Spots not only reduce the service quality of the road seriously, but also increase the proportion of the cumulative number of accidents in the total number of accidents. According to the above-mentioned two points, identifying Black Spots, analyzing the reason why accidents occur frequently, and then putting forward homologous countermeasures, is economical and effective ways to improve road traffic safety condition.

Black spot programs analyze crash data to identify locations where there have been significant numbers of crashes, allocating priorities based on benefit cost ratios and applying treatments to reduce crashes and crash consequences. These treatments have typically resulted in very high cost benefits and made a significant contribution to the reduction in road trauma.

One of the benefits of black spot programs is the rigorous approach to identifying and prioritizing locations for treatment based on actual crash incidence and benefit cost ratios derived from the cost of road trauma compared to the cost of road or road environment treatments. This ensures that the funds applied to treatment of 'bad' locations are applied to the best effect.

2.2 FACTORS CAUSING ACCIDENTS

Road traffic injuries continue to pose as a major public health problem and a leading cause of death for many countries, especially in the developing world. Every year an average of 1.2 million people die and millions more are injured or disabled, mostly in urban areas of developing countries. Such grim statistics definitely demands urgent attention and concerted effort by the international community to tackle and reverse the situation, as road traffic injuries, are largely preventable.

Road traffic crashes are as old as the roads themselves. Nicolas-Joseph Cugnot crashed his steam-powered "Fardier" against a wall in 1770. Amongst the earliest recorded motor vehicle accident fatalities were Mary Ward who died after being thrown from an experimental steam car on August 31, 1869 in Parsonstown, Ireland, and Bridget Driscoll who was hit by a car on August 17, 1896 in London.

Many of the earliest innovations in road safety are credited to William Phelps Eno, sometimes known as the "father of traffic safety". He is credited with conceiving the stop sign, the traffic circle (roundabout), the one-way street, and many other features of traffic control that are taken for granted today. The earliest methods for improving road safety included traffic signs and signals, and road markings such as center lines (June McCarroll's idea), as well as compulsory driver testing and licensing.

The foregoing list of early interventions is some examples of the "three E's": Engineering, Education, and Enforcement efforts to overcome human error and imperfect human reliability. Road user error has been recognized as a principal causative factor of collisions from the beginning, since the percentage of crashes directly attributable to animals or mechanical failure is very small. The term "crash" is preferred by authorities rather than the popular term "accidents" so as to also encompass rare but deliberate acts, such as road rage. Generally, crashes appear to be results of the "three I's", that is, inattention, illness, or impairment, rather than malice or terror. Vulnerable road users bear the consequences of the 3 I's, even in the cases when they themselves are inattentive, ill, or impaired rather than a vehicle user being, perhaps, impaired. The standard measures used in assessing road safety interventions are fatalities and killed or seriously injured.

The very first self-powered road vehicles were powered by steam engines. Nicolas Joseph Cugnot of France built the first automobile in 1769, which was recognized by the British Royal Automobile Club, and the Automobile Club de France as the first self-powered automobile. As the trend in transportation continued into the age of internal combustion, the automobile became available to the mass market due to the ingenious assembly line production team of Henry T. Ford. In 1909, Ford produced the first run of Model T internal combustion automobiles. The first vehicles caused quite a ruckus. Not only were they undependable, fickle and loud; but also to ensure that they made it from point A to point B, it was advised to take a mechanic along for the ride in the event of an almost inevitable breakdown. No roads had yet been built, and turning was clumsy. Signs began popping up stating, "Sound Your Klaxon!" (the original manufacturer of the automobile horn) at every sharp turn. There were many accidents. Nearly one century later, modern civilization defines itself by the liberation and freedom that accompanies the use of personal transportation. With an estimated 150 million automobiles of all shapes and sizes flooding our modern world, congestion and accidents plague our everyday travels.

A car crash is an accident that results from the crashing of two automobiles. Whether it is a fender-bender or a fatal accident, there are numerous influences that factor into causing a particular accident. Upon investigation of these accident-causing influences, one notices a trend that develops, and is able to possibly conclude why these accidents occur. Car condition, vehicle type, the age and gender of the driver, distractions the driver experiences and pedestrian presence are all influences that affect the way a driver pilots their motor vehicle. If these influences are overwhelming, an accident will result. Although an accident doesn't seem like much, there were 6,316,000 police-reported accidents in the United States in 2002 alone. Analysis of these influences will help to educate drivers to ensure safety on the road.

Below are the death and road accidents statistics in Malaysia from 2002 until 2006. This data was taken from 'Polis di Raja Malaysia'. All data sorted according to types of injuries and vehicles involved. In table 1, we can see that the number of accidents occurred is 279,711. The numbers then drastically increased more than 18% in four years time and make it 341252 accidents in 2006.

Accident	2002	2003	2004	2005	2006
Fatal	5,378	5,634	5,678	5,623	5719
Severe	6,696	7,163	7,444	7,600	7373
Minor	30,259	31,357	33,147	25,905	15596
Damage	237,378	254,499	280,546	289,136	312564
Sum	279,711	298,653	326,815	328,264	341252

Table 1: accidents occurred from 2002 until 2006

In the following table (Table 2) shows types of injuries from year 2002 until 2006. Though severe injuries yield higher numbers compared to other injuries, numbers of fatalities is also high.

Table 2: types of injuries from year 2002 until 2006

Injury	2002	2003	2004	2005	2006
Fatal	5,891	6,286	6,228	6,200	6287
Severe	8,425	9,040	9,218	9,395	9253
Minor	35,236	37,415	38,645	37,417	19885
Damage	49,552	52,741	54,091	47,012	35425

Below, in table 3 the data sorted according to injury occurred to drivers and passengers also for pedestrians and types of vehicles involved.

Table 3: Types of injuries from year 2002 until 2006

User	Injury	2002	2003	2004	2005	2006
Pedestrians	**Fatal**	650	683	675	601	595
	Severe	765	757	773	747	711
	Minor	2450	2,609	2,532	2,175	1493
Driver	**Injury**	**2002**	**2003**	**2004**	**2005**	**2006**
Motorcycle	**Fatal**	3034	3166	3101	3181	3243
	Severe	4492	4836	4954	5205	5046
	Minor	21,675	22830	23968	19059	11105
Bicycle	**Fatal**	235	248	264	213	228
	Severe	347	352	385	303	278
	Minor	1389	1459	1483	1049	684
Car	**Fatal**	558	682	720	719	677
	Severe	656	753	840	832	887
	Minor	3228	3773	3745	2974	1971
Van	**Fatal**	69	46	41	51	48
	Severe	105	98	103	80	85
	Minor	351	319	288	250	153
Bus	**Fatal**	16	14	21	19	11
	Severe	17	25	21	23	23

	Minor	88	67	55	45	64
Lorry	**Fatal**	128	154	153	132	142
	Severe	134	152	147	146	153
	Minor	546	577	553	420	306
4 wheels drive	**Fatal**	32	42	49	44	54
	Severe	42	43	58	50	66
	Minor	249	220	244	188	112
Others	**Fatal**	45	42	56	53	45
	Severe	71	57	42	61	41
	Minor	285	238	236	162	110

Passenger	**Injury**	2002	2003	2004	2005	2006
Motorcycle	**Fatal**	395	382	399	410	450
	Severe	808	820	866	1003	883
	Minor	2247	2214	2439	2364	1684
Bicycle	**Fatal**	26	8	19	14	14
	Severe	31	34	48	30	27
	Minor	113	125	155	70	76
Car	**Fatal**	465	505	488	525	538
	Severe	645	674	648	617	702
	Minor	1519	1740	1899	1705	1326
Van	**Fatal**	87	92	60	60	55
	Severe	122	145	107	100	80
	Minor	354	356	322	283	227
Bus	**Fatal**	29	53	48	29	28
	Severe	66	79	78	49	95
	Minor	304	291	289	194	251
Lorry	**Fatal**	69	72	80	65	87
	Severe	61	78	71	70	70
	Minor	195	194	222	199	146
4 wheels drive	**Fatal**	42	49	35	63	56
	Severe	49	45	58	54	77
	Minor	145	174	141	186	135
Others	**Fatal**	11	48	19	21	16
	Severe	14	92	19	25	29
	Minor	98	229	74	94	42

2.2.1 DRIVER DISTRACTIONS

Distracted drivers are responsible for millions of dollars in insurance claims every year. According to the Response Insurance National Driving Habits Survey, 76% of all drivers engage in activity that takes their attention off of the road. Further data revealed the following diversions of attention: 57% of drivers eat while driving, 32% read and write while driving, 17% comb their hair, and 29% of drivers use their cell phones on the road.

In 1997, the New England Journal of Medicine reported that the use of cell phones in automobiles quadrupled the risk of a collision; however, despite the profound results, no additional legislation restricted such use while on the road. Americans have been afforded total freedom to operate cell phones while driving with only minimal exceptions within a few cities. As technology has advanced into the present, devices such as web enabled cell phones and personal digital assistants, have added to the already increasing problem.

Many activities within a moving vehicle along with the physical capabilities of a driver have led to the potential grounds for poor judgment and possibly little time to prevent an accident. Easily overlooked as simple activities; adjusting the radio, other passengers present, knowledge and use of vehicle controls, eating and drinking, and smoking was among the most common. The University of North Carolina Highway Safety Research Center conducted a study on what type of distractions caused the highest numbers of accidents. Those that occurred outside of the car accounted for 29.4% followed by the adjustment of the radio/CD player, which resulted in 11.4%, and remainder, other passengers inside of the vehicle, completed the findings at 10.9%. Other forms of distraction noted previously included accidents connected to the use of vehicle controls, which resulted in 2.8% of distracted drivers accidents. Eating and drinking, and cell phones were responsible for a much lower percentage of the accidents, 1.7% and 1.5% respectively. The distraction that caused the least amount of accidents was smoking, responsible for a mere 0.9% of distracted driver accidents.

2.2.2 DEMOGRAPHICS FACTORS

The demographics factors are the age, gender and occupation factor. Drivers between the age of 15 and 20 accounted for only 6.9 percent of all licensed drivers, but were involved in 16.0 percent of all accidents and 14.0 percent of all fatal accidents. The fatality rate for drivers 16 - 19 is about 4 times as high as the rate for drivers age 25 - 69. However, the fatality rate for driver's age 70 and older is 9 times as high.

Most aggressive drivers are young, usually between 18 and 26 years old. Emotions that have included frustration, irritation, aggravation and impatience, have led many to impaired judgment and risky driving behaviors. Their risky driving behaviors have often included speeding, passing unsafely, or getting upset because the other driver was not driving as fast as they wished at that moment.

The FARS is a system that records fatal accidents caused by motor vehicles in the United States. It breaks down traffic fatalities into different groups such as those that are drivers, passengers, pedestrians, etc. The statistical data covers a nine-year time span, showing trends in fatalities. These statistics show that men are involved in fatal accidents at a ratio of about twice that of females. Moreover, both very young drivers (ages 15 through 34) and older drivers (ages 74 and greater) are responsible for the vast majority of fatal accidents. Over time, the number of accidents in a specific age category may either increase or decrease with no identifiable pattern, perhaps reflecting more of the change in population demographics than a change in driver behavior.

Human factors are a large percentage of issues at intersection accidents and fatalities. Older drivers are often impaired in vision, hearing, and reaction times, causing a 10-fold increase in likelihood for a multi-vehicle intersection accident as drivers aged 40-49 years. Similarly, younger drivers are prone to take risks accompanied by lack of driving experience, and represent the highest rate of traffic violations and crash involvement.

2.2.3 TRAFFIC FACTORS

According to the National Highway Traffic Safety Administration, rural areas contributed to the highest death rate, 58.4 percent, as compared to urban areas. Likely explanations for this would include the greater road mileage and higher speed of rural drivers and longer amounts of time elapsed between the crash and the arrival of victims at hospitals in rural areas.

Many studies have been performed investigating the contributions of several variables to accidents involving pedestrians. For example, a statewide study conducted by Washington State Department of Transportation discovered that accidents involving children most frequently occur around 7 in the morning, when students are going to school, and 3 in the afternoon, as students are coming home. Another finding from the same study was that pedestrian collisions were most common in more heavily urbanized areas. Other interesting results are that well over half (62.3%) of all pedestrian collisions involve cars, as opposed to trucks or buses, and the vast majority of collisions occur on dry roads and in relatively clear weather. Another important fact is that failure to yield and/or inattention (by both driver and pedestrian) account for the overwhelming majority of all such collisions. Finally, the study showed that almost 30% of pedestrians involved in fatal accidents had been drinking.

- 4808 pedestrians were killed in traffic accidents, a decrease of 13% from 1992, which totaled 5549.
- 71000 pedestrians were injured in a traffic accidents
- 71% of pedestrian fatalities occurred in an urban area, 78% occurred in a non-intersection area, 82% occurred in normal weather conditions, 65% occurred at night
- 40% of the 434 pedestrian fatalities under the age of 16 occurs between 5 and 9pm
- 47% of all pedestrian fatalities occur on a Friday, Saturday, or Sunday.

Other factors that caused accidents under traffic factors are congestion, vehicle types, disregard for road rules, traffic signal timing or distance from intersections and vehicle conditions.

2.2.4 VARIABLES FACTORS

2.2.4.1 Weather

Driving a vehicle in bad weather drastically increases the chance of an accident. According to the National Highway Traffic Administration, there were 819,000 accidents in bad weather (autoaccidentstoday.com). Many of these accidents were caused solely by not driving, as the weather would suggest. Drivers need to take extra care when driving in bad weather. If this is not done then accidents will occur.

2.2.4.2 Lighting

There were almost 1.5 million car accidents that occurred in low light or dark conditions (autoaccidentstoday.com). The time of day can be a huge factor in causing car accidents. When the area driver are not driving in is not well lit driver are susceptible to many things that you don't even see. When it is dark a driver has almost no peripheral vision and even the headlights only help so much. Things coming toward us from the sides and even in front we may not see until it is too late. Avoiding driving at night will reduce the risk of an auto accident. With only 1.2 accidents in the daytime in normal weather it is evident that it makes a difference. The amount of people driving in the daytime is much larger than people driving at night.

2.2.4.3 Construction

To keep roads in good shape there must be construction going on all of the time. Driving up to and through a construction zone is dangerous both for road users and the workers.

2.2.5 PERMANENT ACCIDENT CAUSING FACTORS

Roadway accidents occur due to many different factors. Of the described factors in the above citation, a particular genre of factors called Permanent Factors can be singled out. Permanent Factors are objects that are either constructed or exist beyond the control of the motorist. These factors range from the geometry of the intersection, to the built context in which surrounds the roadway. Permanent factors are considered permanent not due to their physical permanence, because any condition may be constructed differently, but because of their inability or lack of control by the motorist.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 CHAPTER OVERVIEW

This chapter focuses on the approach method in developing the project work. Basically, it will be based on research design and data collection methods for the study. The purpose of this chapter is to meet the objectives which are mentioned in the first chapter.

3.1 RESEARCH METHODOLOGY

The methodology that is adopted through this study is survey-based methodology by which the information is collected directly from the people who are also Batu Gajah to Taman Maju road user. This survey-based methodology had been chose because the data to be collected are verbal in nature and it measured the people's opinion as well. The major processes included identify the problems; establish aim and objectives, literature review, data collection and sampling, data analysis, result interpretation and conclusion as shown in Figure 1.

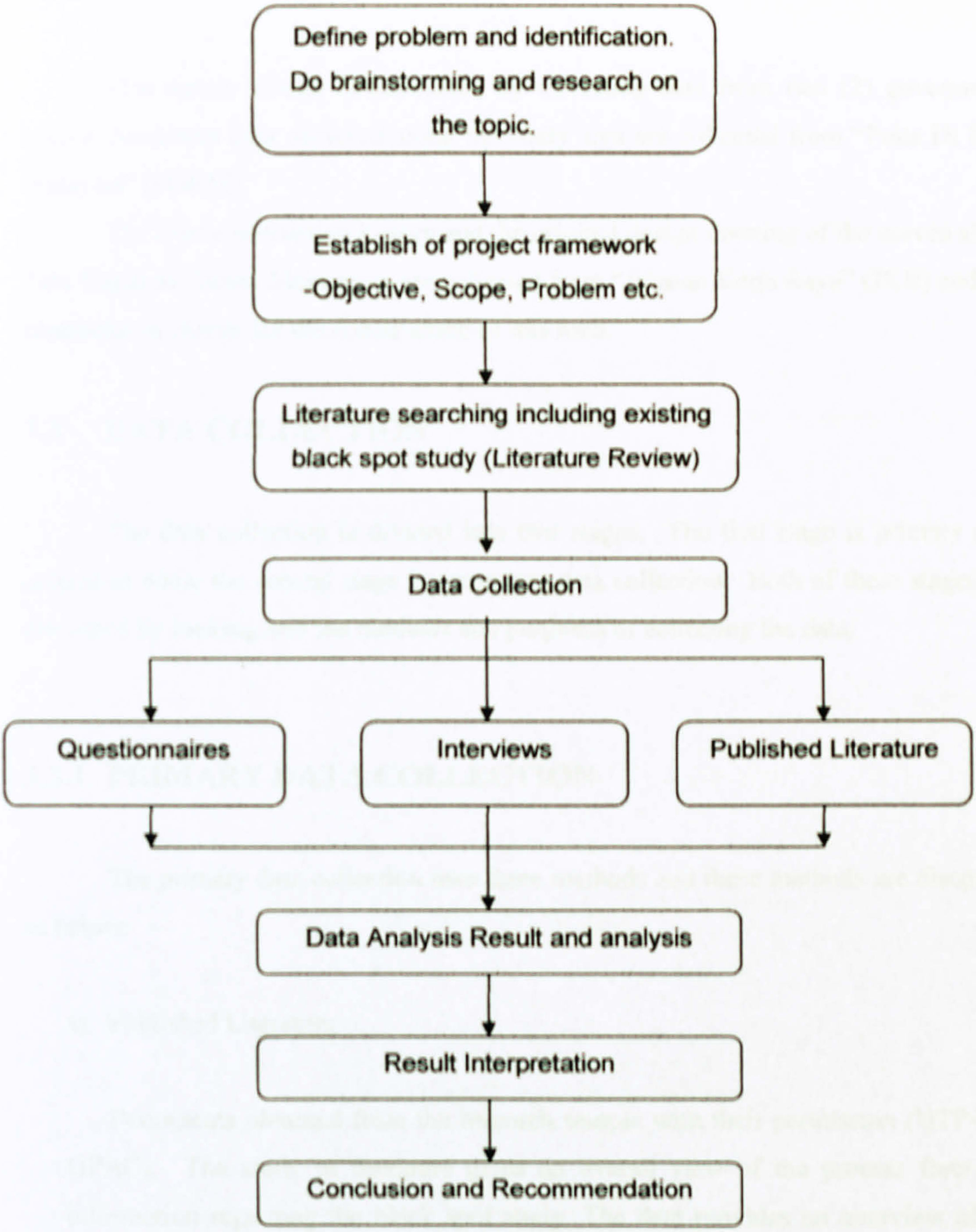

Figure 1: Flow Chart of Research Methodology

3.2 SURVEY DESIGN

This survey design is conducted by collecting data from two (2) government bodies. Accidents data occurred along the study area are collected from "Polis Di Raja Malaysia" (PDRM).

The road construction history and the original design drawing of the curves along Batu Gajah to Taman Maju route are collected from "Jabatan Kerja Raya" (JKR) and the contractor in charge for the construction of this road.

3.3 DATA COLLECTION

The data collection is divided into two stages. The first stage is primary data collection while the second stage is secondary data collection. Both of these stages are discussed by looking into the methods and purposes of collecting the data.

3.3.1 PRIMARY DATA COLLECTION

The primary data collection uses three methods and these methods are discussed as below:

a) Published Literature

Documents obtained from the research sample with their permission (UTP-IRC OPAC). The study of literature gives an overall view of the process flow and information regarding the black spot study. The data provides an overview of the related research which has been done before and gives information in designing better questionnaires and interviews questions.

b) Questionnaires Design

The questionnaires designed to collect data on Batu Gajah to Taman Maju road user like age, gender, occupation, how often they use the road daily and so on. The questionnaires will be distribute and then collect. The area of distribution is in UTP, Taman Maju, Batu Gajah and several areas in between Batu Gajah to Taman Maju. The questionnaires for pilot survey for this project already constructed and approved by supervisor, Dr. Madzlan Napiah. The constructed questionnaires both in English (see Appendix 1) and Bahasa (see Appendix 2) attached in the appendix. The final questionnaires are already finished and half of them are already distributed. The result for the questionnaire will be ready in a week and to be concluded in the final draft. The final questionnaire is attached in the appendix (see Appendix 3).

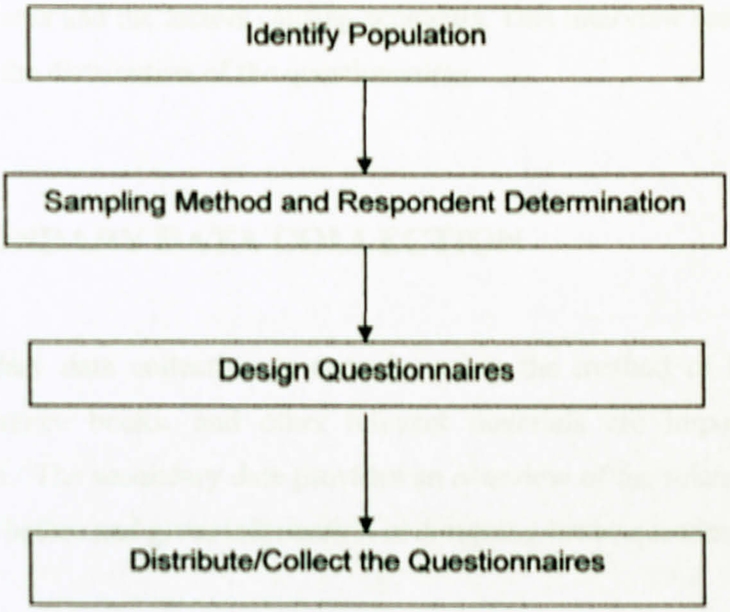

Figure 2: Flow Chart of Questionnaires

The questionnaires prepared based on the fully structured questions and close-ended questions so that it easy for the respondent to give their feedback. However, the additional sections are not provided in the questionnaires for the respondent's comments (open-ended questions). After interviewing some students, they seem like not really interested in answering open-ended questions, so it is decided that only fully structured questions and close-ended questions designed for the questionnaire.

c) Interviews Design

The face-to-face interviews session also conducted with the related organization such as PDRM, JKR and contactors themselves to comment about black spot area and the factors causing accidents. This interview session is carried out before the distribution of the questionnaires.

3.3.2 SECONDARY DATA COLLECTION

Secondary data collection is done by using the method of literature review. Journals, reference books, and other relevant materials are important sourced of secondary data. The secondary data provides an overview of the related research which has been done before and gives information in designing better questionnaires.

CHAPTER 4

RESULTS AND DISCUSSION

4.0 CHAPTER OVERVIEW

This chapter concluded all the findings and research that has been done for this project. All the findings and research's result were gathered through various sources; from the Internet, reference books, and many articles related to this project. All the results have been gathered with the same methodology as explained in the previous chapter. It also included the current development for the project and the result from the portion that has been done.

4.1 RESULT

The questionnaire or the pilot survey for this project is already done. It is also approved by supervisor, Dr. Madzlan Napiah. This questionnaire is already distributed randomly among Universiti Teknologi Petronas students. This questionnaire is a guide to the next questionnaire which is more complete and will be enhance to make sure the data gathered more precise. From the data gathered, most of student's age is around 18 to 26 years old. Below, the pie chart shows the percentage of age for female and male students in Universiti Teknologi Petronas (Figure 3), percentage of drivers age (Figure 4), percentage of types of vehicles owned by students (Figure 5) and percentage of trip they make from Taman Maju to Batu Gajah in a week (Figure 6).

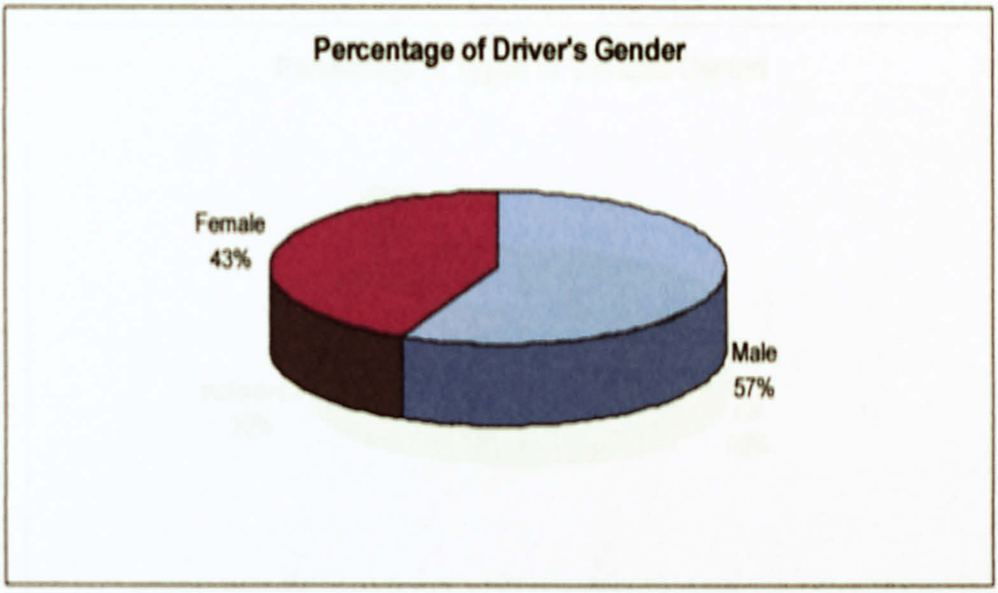

Figure 3: Percentage of driver's gender

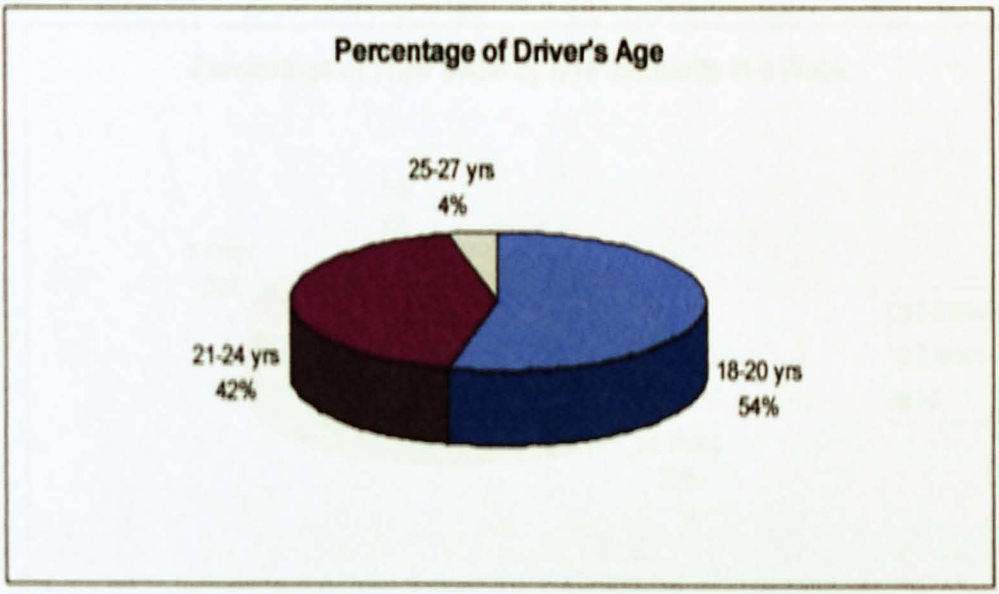

Figure 4: Percentage of driver's age

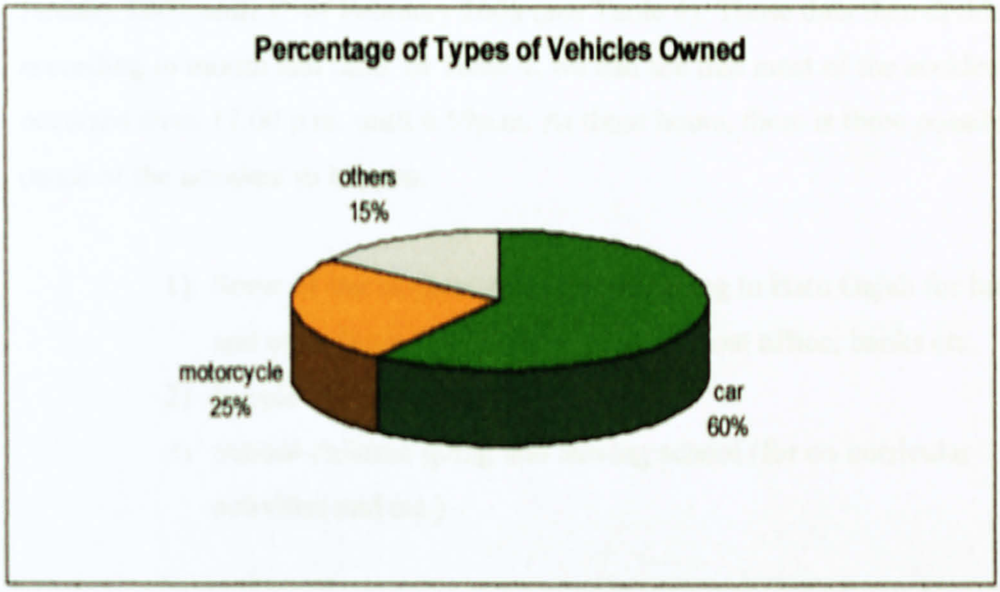

Figure 5: Percentage of types of vehicles owned by students

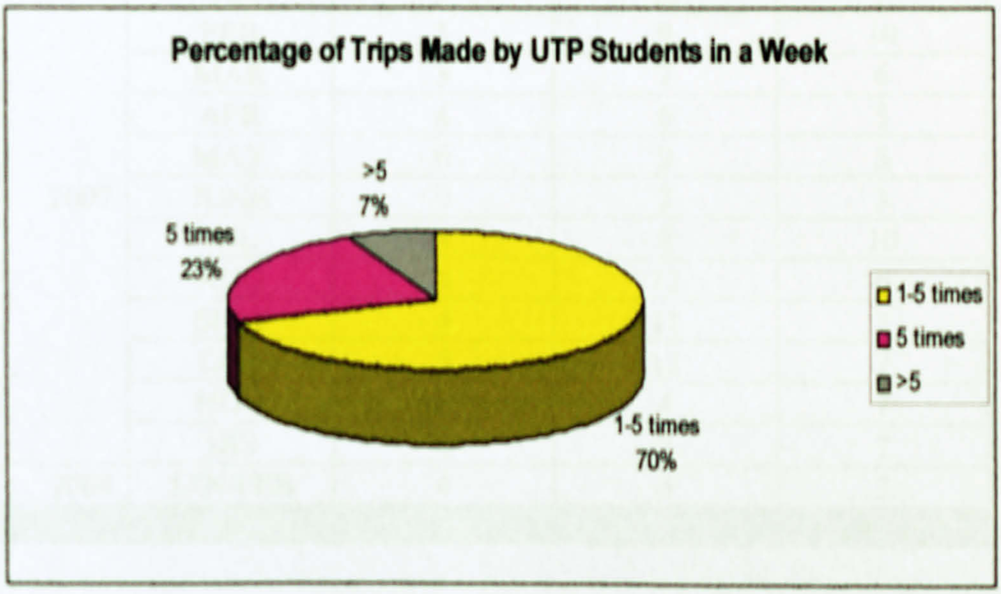

Figure 6: Percentage of trips made by UTP students in a week

4.1.1 RESULT GATHERED FROM POLICE STATION IN BATU GAJAH

The accident data of the road from Ipoh-Lumut was obtained on 14th March. The accident data obtained was the data of accidents started from 1st of January 2007 until 1st of February 2008 (see Table 4). Those data then divided according to month and time. In Table 4, we can see that most of the accidents occurred from 12.00 p.m. until 6.59p.m. At these hours, there is three possible cause of the accident to happen.

1) Some of the workers from Tronoh going to Batu Gajah for lunch and other businesses such as going to post office, banks etc.
2) People coming home from work.
3) School children going and leaving school (for co-curricular activities and etc.)

Table 4: Accident data along Batu Gajah-Taman Maju route from 1/1/07 – 1/2/08

YEAR	MONTH	6.30a.m - 11.59a.m	12.00p.m - 6.59p.m	7.00p.m - 5.59a.m
2007	JAN	3	10	7
	FEB	5	9	10
	MAR	3	7	6
	APR	4	6	5
	MAY	6	9	5
	JUNE	9	7	3
	JUL	4	8	10
	AUG	4	12	6
	SEPT	4	11	3
	OCT	5	12	7
	NOV	2	4	7
	DIS	6	7	7
2008	JAN/FEB	4	4	3
	SUM	59	106	79

The data then analyzed and a bar chart has been developed (see Figure 7). Those data was divided monthly and time it was occurred. As we can see, the highest rate of accidents occurred in the month of February and October which are festive seasons. In the month of February, Malaysians celebrated Chinese New Year while in October, Muslims celebrated Eid Mubarak. During the visit to the police station, an oral interview also conducted to get their professional opinion about the road and accidents occurred while they doing patrol along the study road. The interview questions will be put in the appendix.

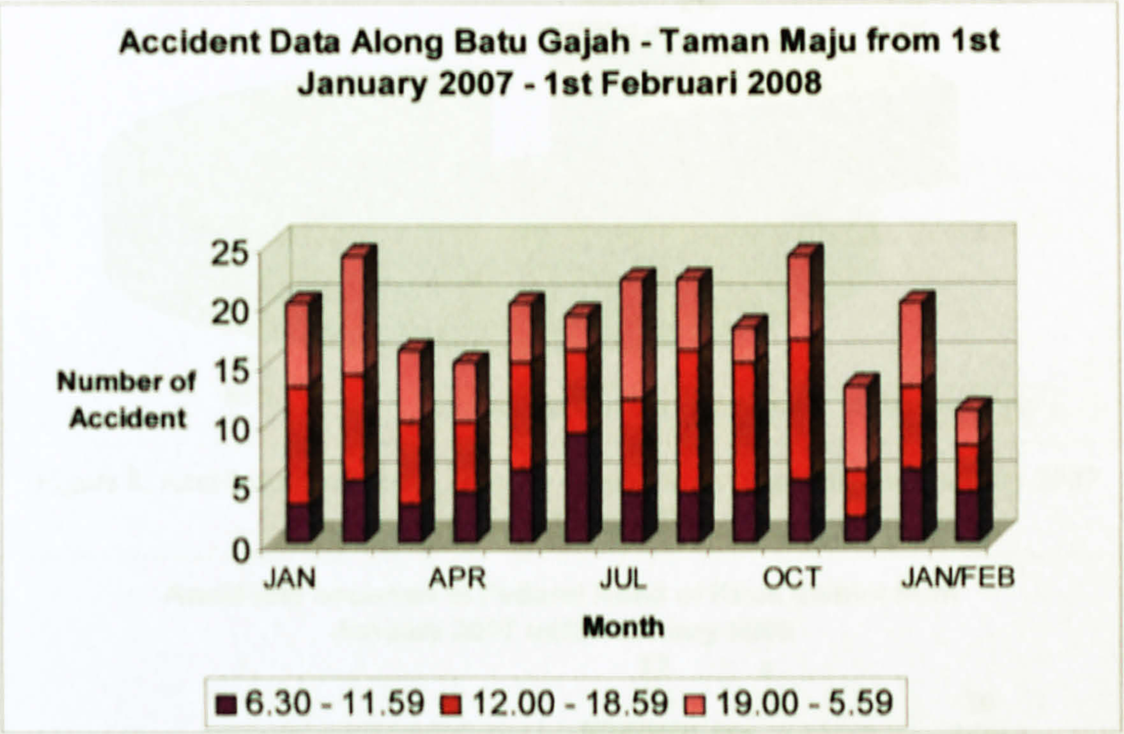

Figure 7: Bar chart of the accident data along Batu Gajah-Taman Maju from 1/1/07-1/2/08

The accidents data also sorted according to types of road (see table 5) and also types of vehicles involved. For this project, four types of route involved in the scope of study. There are two state roads and 2 federal roads. All four routes will be use by the user from Batu Gajah to Taman Maju. All fatalities that are fatal, severe, minor injuries and damage only are sorted according to roads and types of vehicles involved.

Type of road	Fatal	Severe	Minor	Damage only	Total
Federal road	12	4	36	211	263
State road	14	10	50	319	393
Inter-city road	4	1	27	125	157
Others	1	0	0	34	35
Total	31	15	113	689	848

Table 5: Accident data at all types of roads for Kinta districts from January 2007 until February 2008.

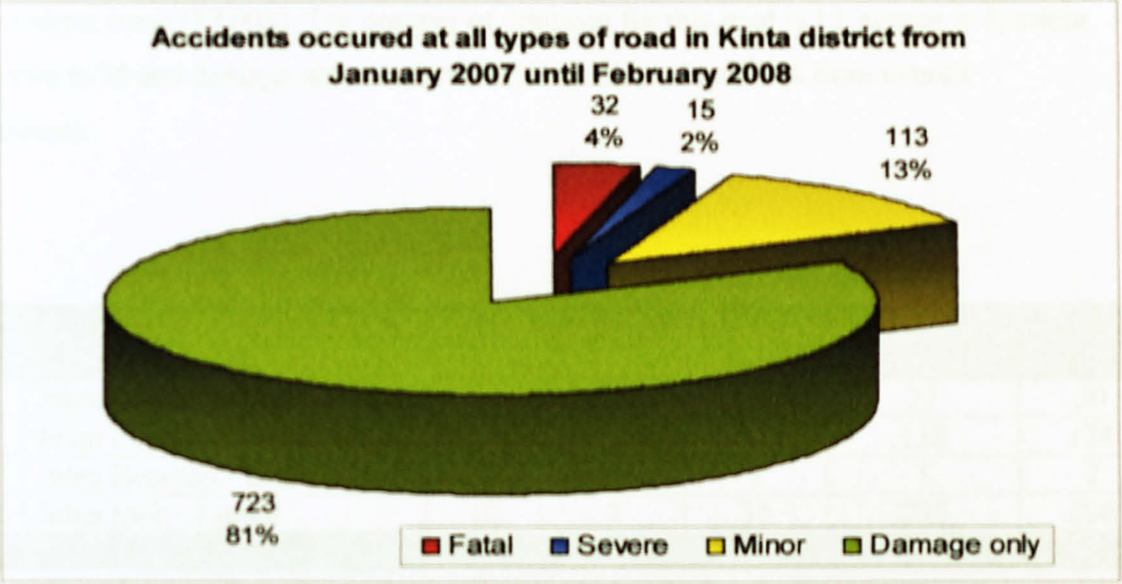

Figure 8: Accidents occurred at all types of road from (Kinta district) January 2007 until February 2008

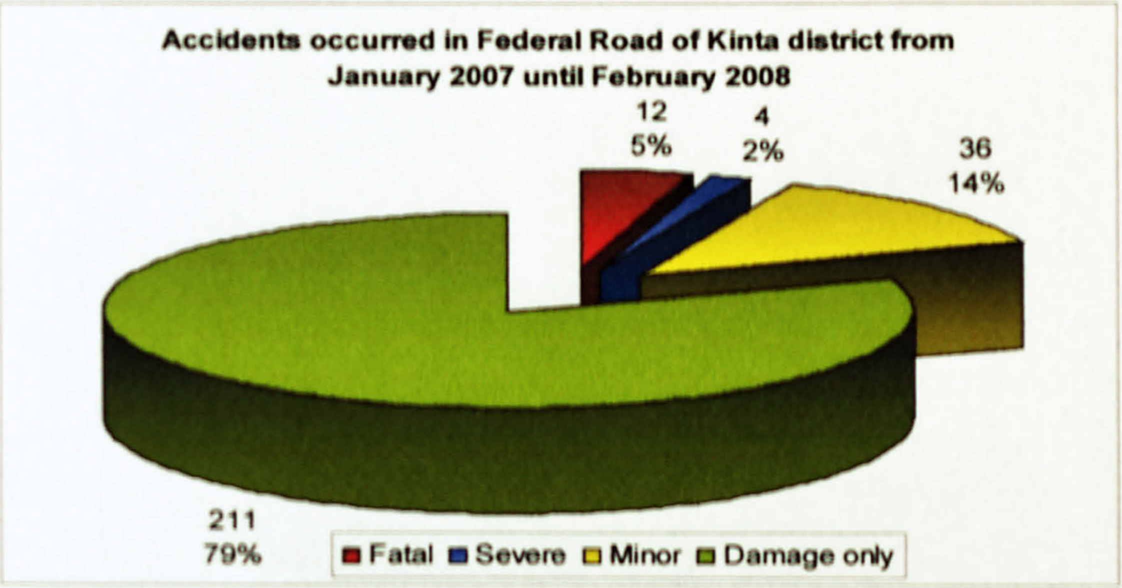

Figure 9: Accidents occurred at all types of road from (Kinta district) January 2007 until February 2008

In Figure 8, the pie chart shows the accidents occurs at all federal roads for Kinta district. This data is taken from Batu Gajah's District Police Station (IPD). The data recorded from the 1st of January 2007 until 29th February 2008. The number of fatalities is 32, severe is 15, minor is 113 and the largest numbers of accidents involved is the damage only. In Figure 9, the Federal roads were analyzed as the study route involved the federal route (FT005). The number of fatalities for this road is 12, severe is 4, minor injuries is 36 and damage only crashes is 211 which is about 79% from overall accidents.

No	Route	Fatal	Severe	Minor	Damage only	Total
A108	Jalan Bemban - Batu Gajah	1	0	2	27	30
A15	Jalan Pusing - Batu Gajah	5	7	24	138	174
FF315	Jalan Bemban - Batu Gajah	0	0	1	1	2
FT005	Jalan Ipoh - Lumut	12	3	32	205	206
	Total	18	10	59	371	412

Table 6: Types and numbers of injuries according to the type of route

As mentioned before, there are four routes involved in this study. There are two state route, A108 and A15 while for the federal road are FF315 and FT005 (see table 6). The number of fatalities for federal road is higher compared to the number of fatalities at state roads (see figure 10 and 11). The numbers of accidents are high and it is contribute to the usage of money especially those that involved the damage road furniture.

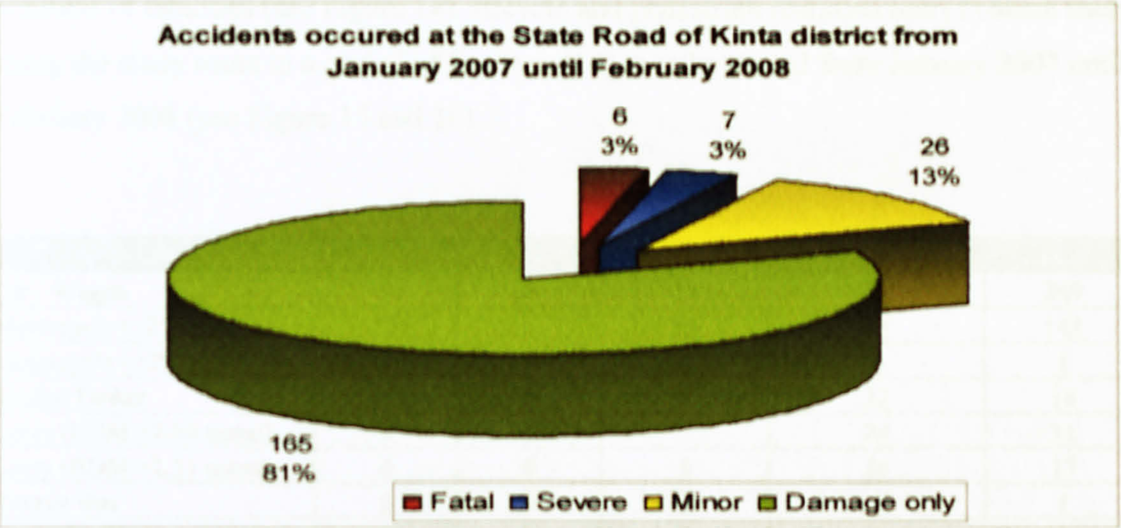

Figure 10: Accidents occurred at the state road (Kinta) from January 2007 until February 2008

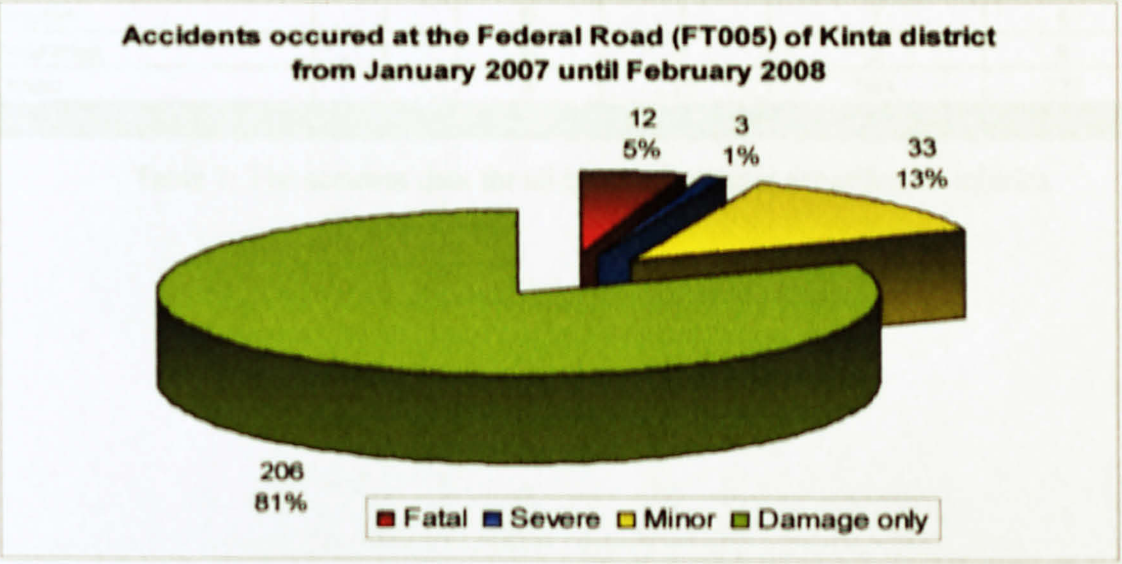

Figure 11: Accidents occurred at Federal Road (Kinta) from January 2007 until February 2008

The road users of Batu Gajah to Taman Maju route vary from large trucks to small vehicles or pedestrians (see Table 7). Most accidents are involved car or wagon which contributes 44% of the accidents (see Figure 12). Second most involved vehicles are motorcycle with less than 251cc which contributes 17% of the overall numbers (see Figure 13). Even the lorry (weight with load > 2.5 tonne) contributes about 4% of the accidents, trailer or tanker need to be highlighted as it contributes 10% of the total numbers of fatalities (see Figure 14). Bicycle and pedestrian recorded one (1) death each along the study route in a period of fourteen (14) months started from January 2007 until February 2008 (see Figure 15 and 16).

Vehicle	Fatal	Severe	Minor	Damage only	Total
Car / Wagon	9	6	30	324	369
Motorcycle (<251 cc)	13	4	51	75	143
Motorcycle (>250 cc)	0	0	0	1	1
Trailer/Tanker	3	0	1	12	16
Lorry (BDM >2.50 tonne)	0	0	7	24	31
Lorry (BDM <2.51 tonne)	0	0	1	16	17
Tourist Bus	0	0	0	1	1
Inter-city Bus	0	0	0	3	3
School Bus	0	0	2	0	2
Van	0	0	0	10	10
Jeep/Pick-up/Land Rover	0	0	0	14	14
Taxi	0	1	0	1	2
Bicycle	1	0	1	2	4
Pedestrian	1	0	5	2	8
Others	4	4	15	204	227
Total	31	15	113	689	848

Table 7: The accident data for all types of vehicles according to injuries

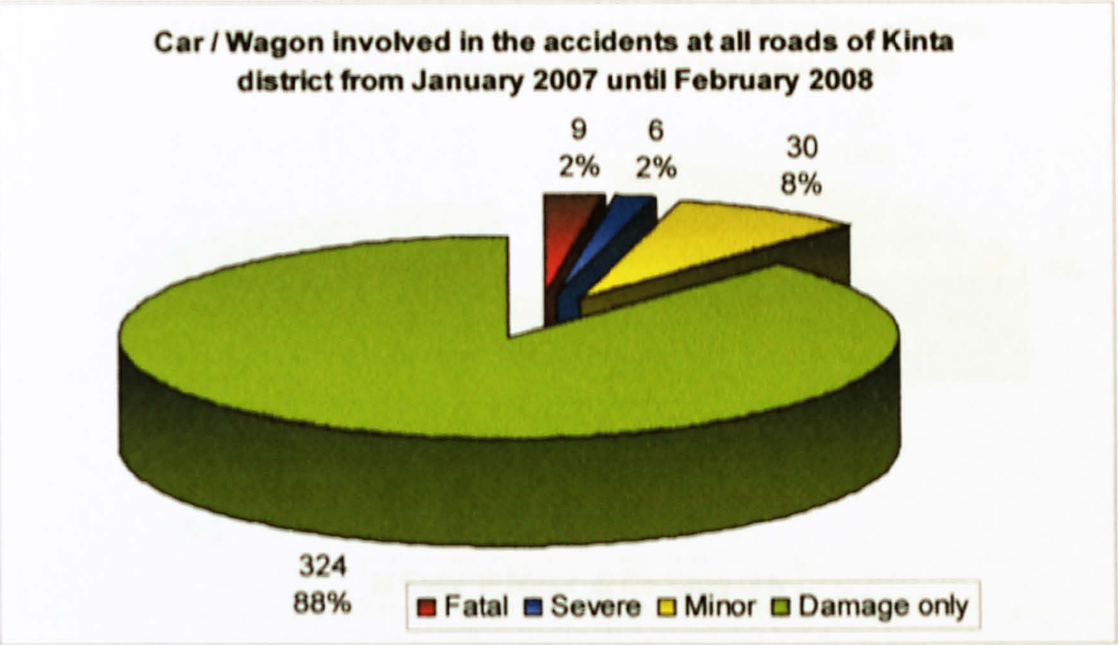

Figure 12: Car or wagon involved in the accidents at all roads (Kinta district) from January 2007 until February 2008

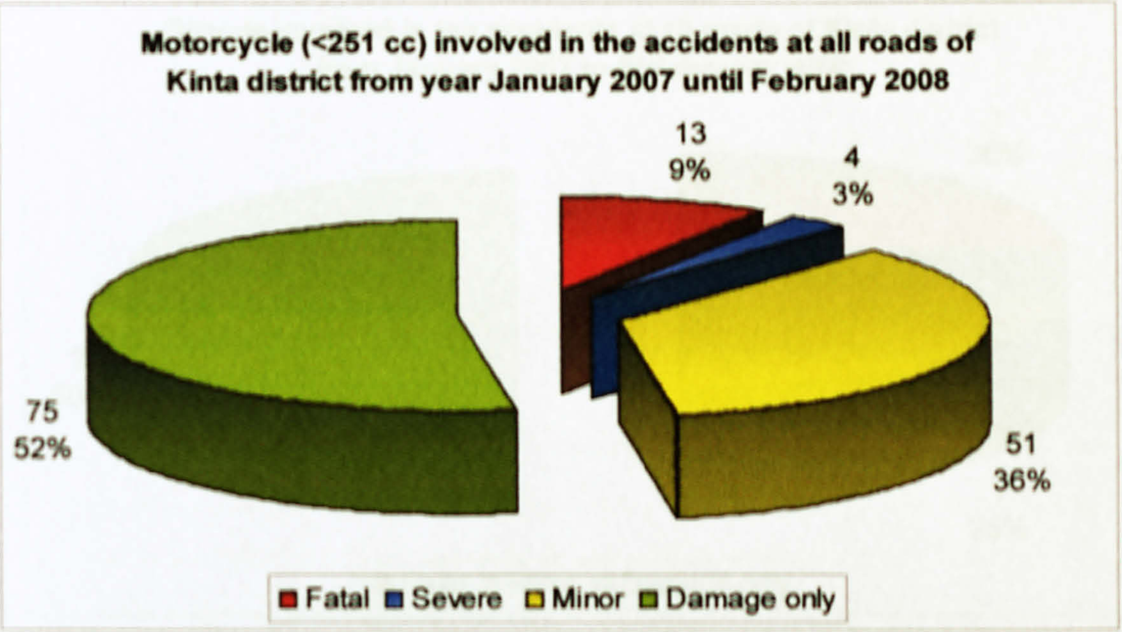

Figure 13: Motorcycle (<251 cc) involved in the accidents at all roads (Kinta district) from January 2007 until February 2008

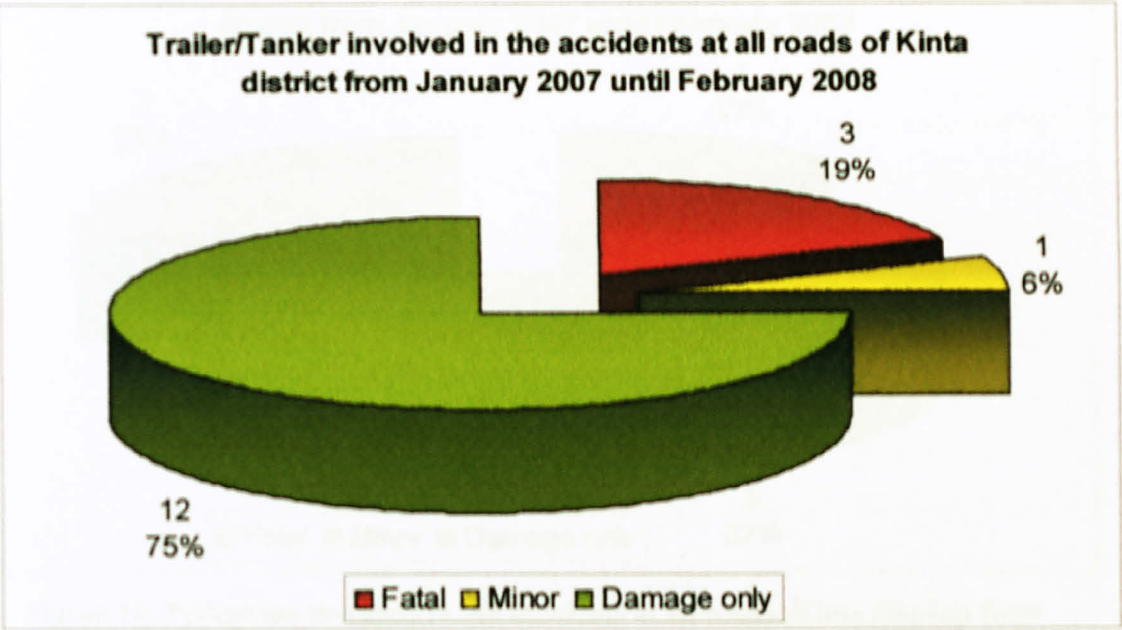

Figure 14: Trailer or tanker involved in the accidents at all roads (Kinta district) from January 2007 until February 2008

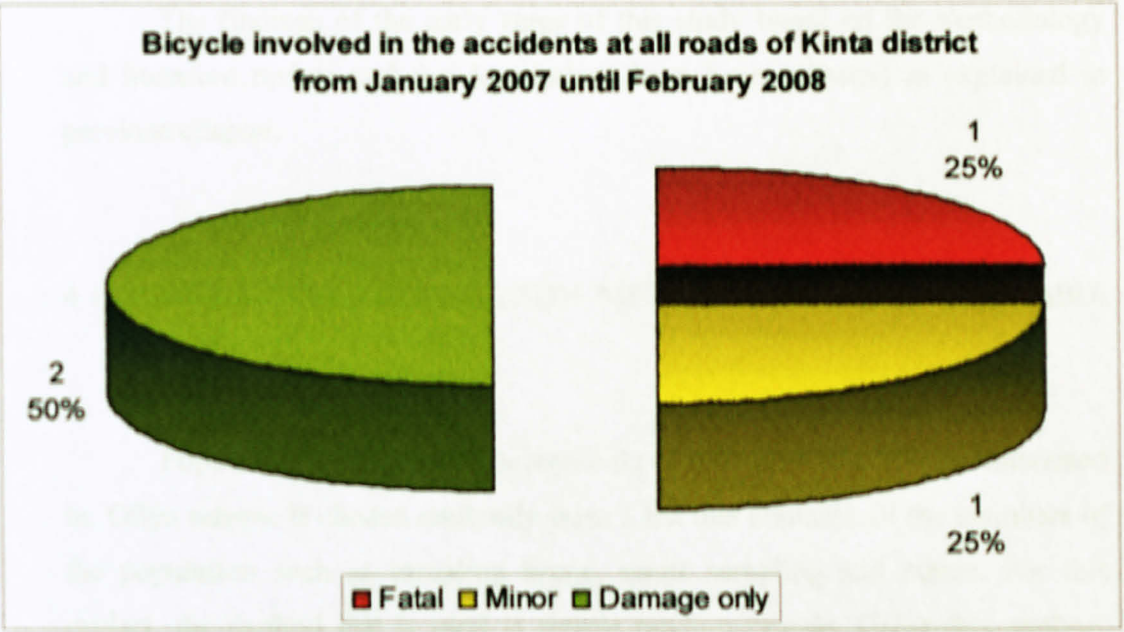

Figure 15: Bicycle involved in the accidents at all roads (Kinta district) from January 2007 until February 2008

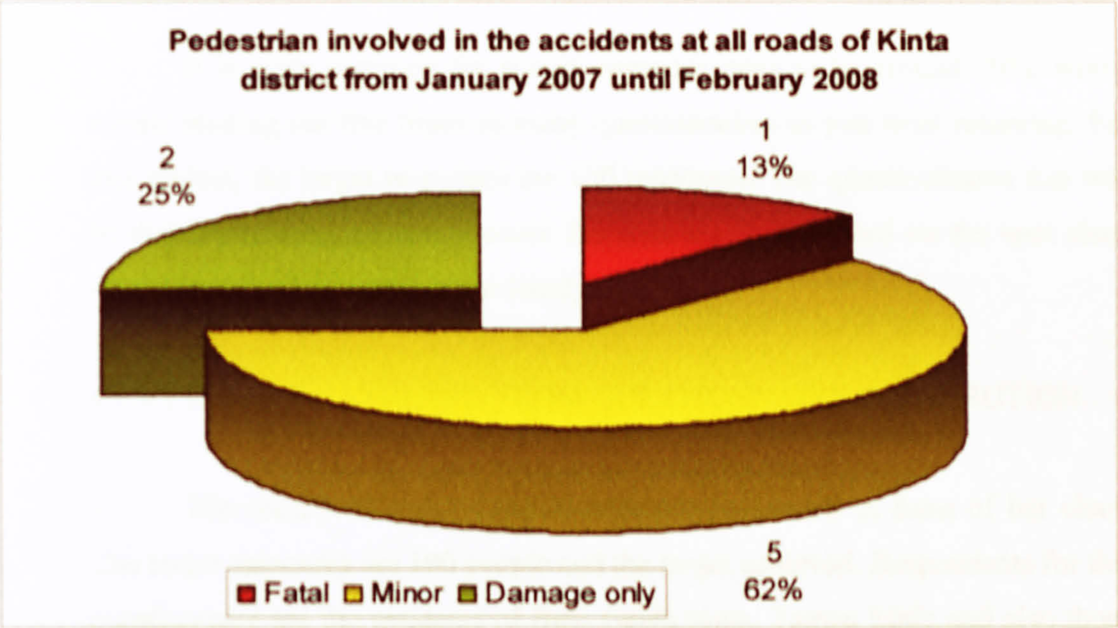

Figure 16: Pedestrian involved in the accidents at all roads (Kinta district) from January 2007 until February 2008

4.1.2 LITERATURE REVIEW AND METHODOLOGY

The findings of the early stage of this study based on the methodology and literature review and the descriptions have been gathered as explained in previous chapter.

4.1.3 IDENTIFYING POPULATION METHODS FOR QUESTIONNAIRE DESIGN

Population is simply all the members of the group that you are interested in. Often sample is chosen randomly from a list that contains all the members of the population such as sampling frame, quota sampling and others. For this project, the method that is used is simple random sample. Using this method, each individual is chosen randomly and entirely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process.

It is quite common for survey response rates to be around 20%, which means sending out five times as many questionnaires as you want returning. For this project, the target responses are 100 responses. The questionnaires that will be distributed are also 100 because the data will be gathered on the spot since respondents will responds immediately.

4.1.3.1 RESULT GATHERED FROM QUESTIONNAIRE DISTRIBUTION

The results from the questionnaire are assembled in form of bar chart. The target responses are 100 people and the target achieved. Respondents for this questionnaire are the residents of Batu Gajah town, Taman Maju and also those that reside along the Batu Gajah – Taman Maju route. There are seven (7) questions need to be answered by the respondents (see Appendix 3).

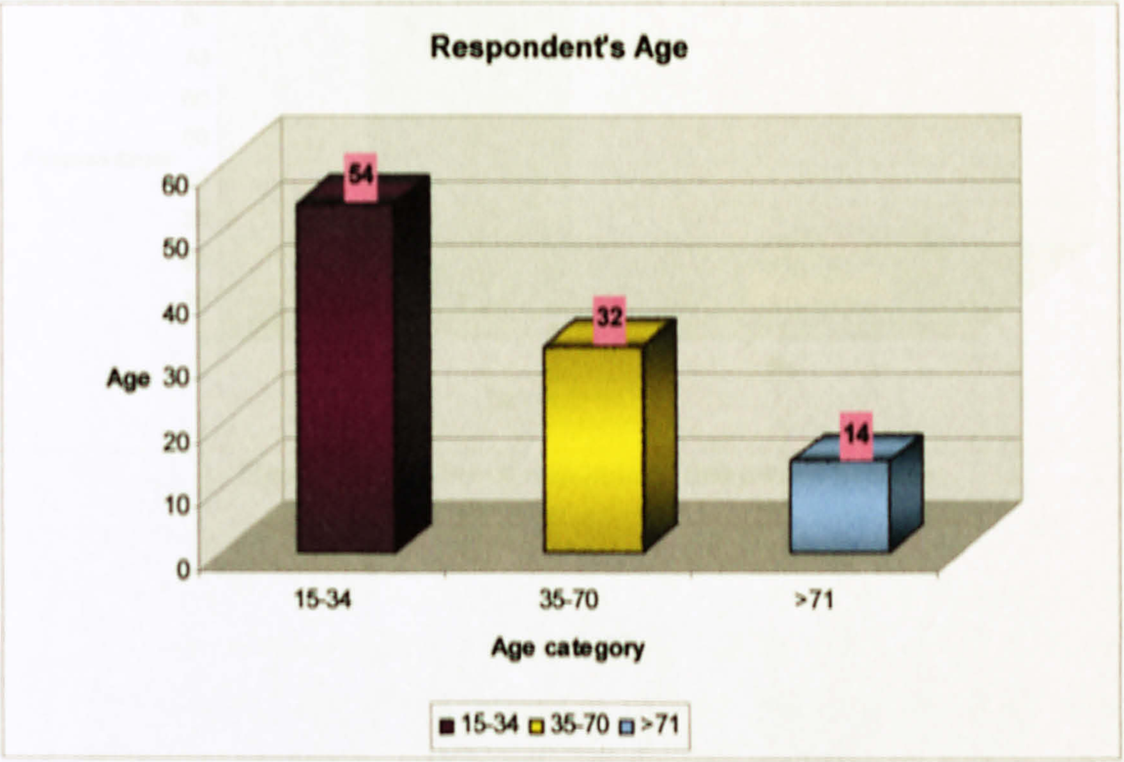

Figure 17: Respondent's age

Figure 17 on the previous page shows the respondents age obtained from the questionnaire. Their age then divide into three (3) categories that is 15-34 years old, 35-70 years old and more than 71 years old. In Figure 18 below, shows the number of respondents that owned the driving licenses. From 100 respondents, 89 people owned driving licenses while the rest of them are driving without driving license. Figure 19 shows the types of licenses owned by the respondents. About 45% of them owned permanent driving license, 33% owned the probation driving licenses (P), 7% owned beginner licenses (L) and 15% do not have driving license at all.

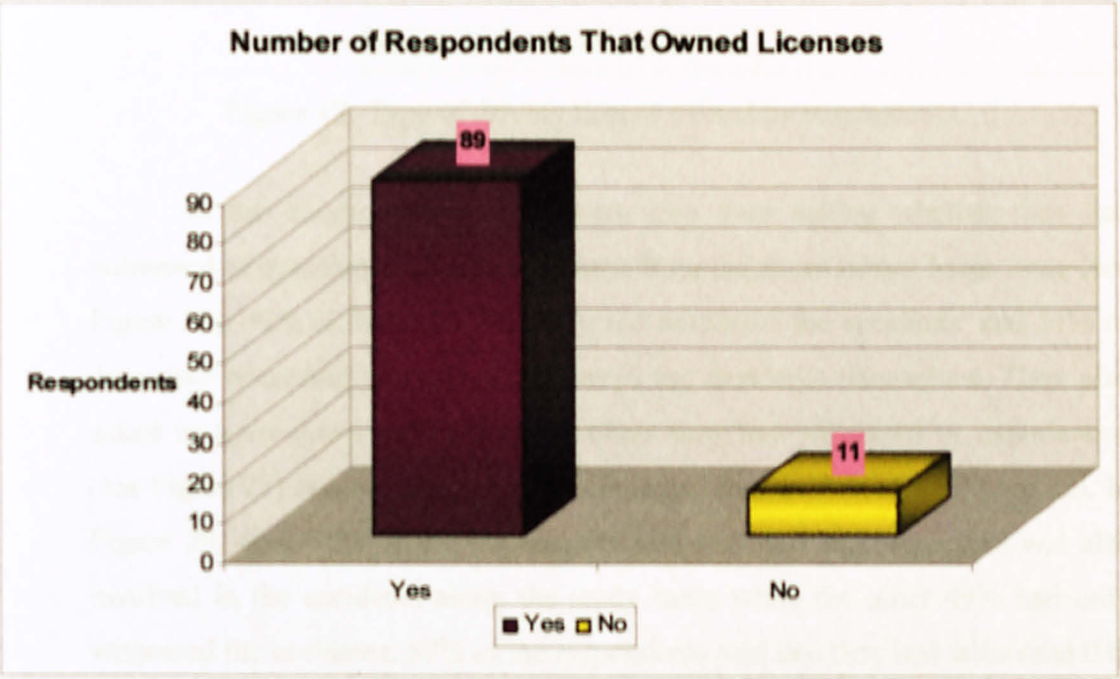

Figure 18: Number of respondents that owned licenses

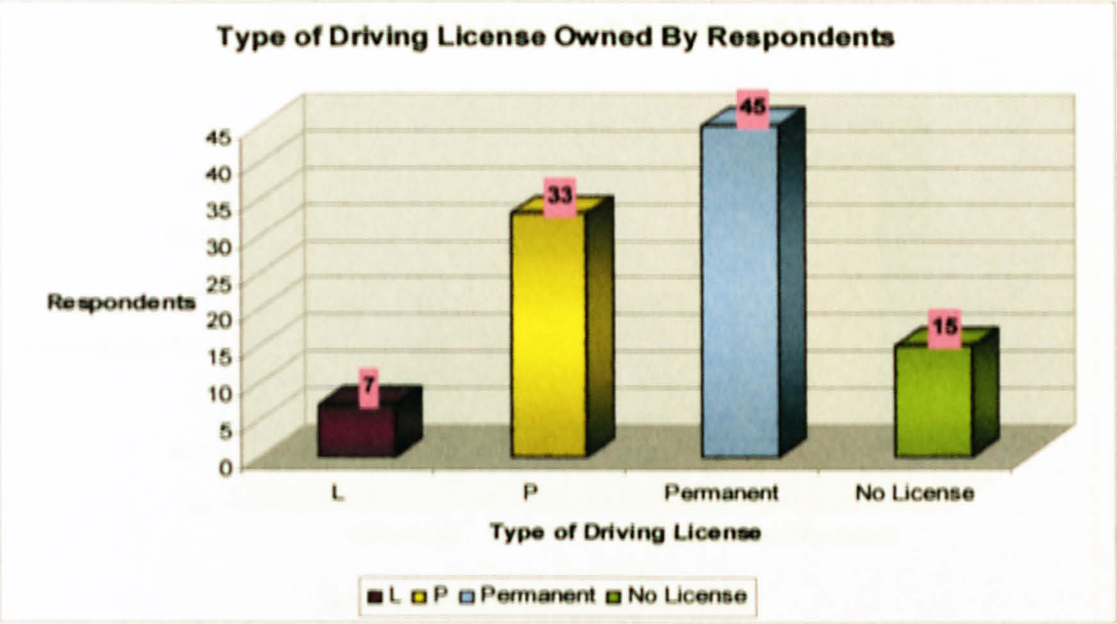

Figure 19: Type of driving license owned by respondents

In the questionnaire, respondents also been asking whether they had witnessed or experienced accidents along Batu Gajah to Taman Maju route (see Figure 20). 49% of them said that they had witnessed the accidents and 51% of them had witnessed and also experienced the accidents themselves. They also asked to write down numbers of accidents they had witnessed or experienced (see Figure 21) and the time they had witnessed the accidents (see Figure 22). In Figure 20, over 51% of the respondents said that they had witnessed and also involved in the accidents along the study route while the other 49% had only witnessed the accidents. 67% of the respondents said that they had witnessed 0 to 3 accident and 13% had witnessed 4-8 accident in a year. 18% of the respondents said that they had witnessed and also involved in the 0 to 3 accidents. For the time accidents occurred, 37% of the respondents said that most of the accidents occurred during night time and 63% during daytime that is around 5.30pm - 7.30pm. This statement is consistent with the data collected from police department.

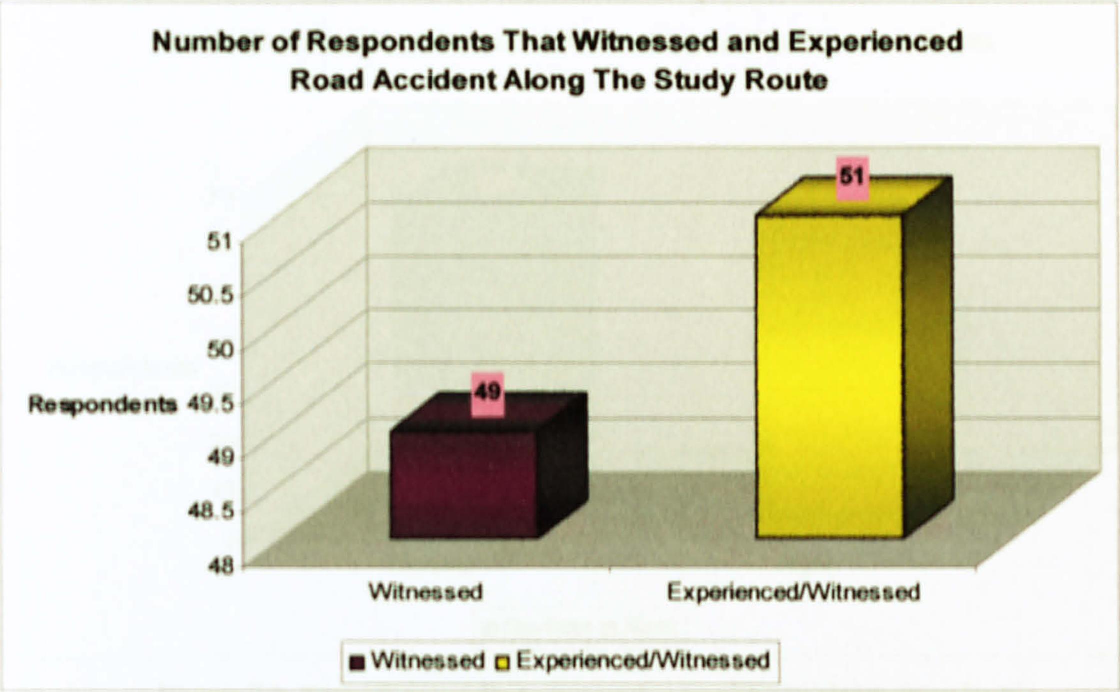

Figure 20: Number of respondents that witnessed and experienced road accident

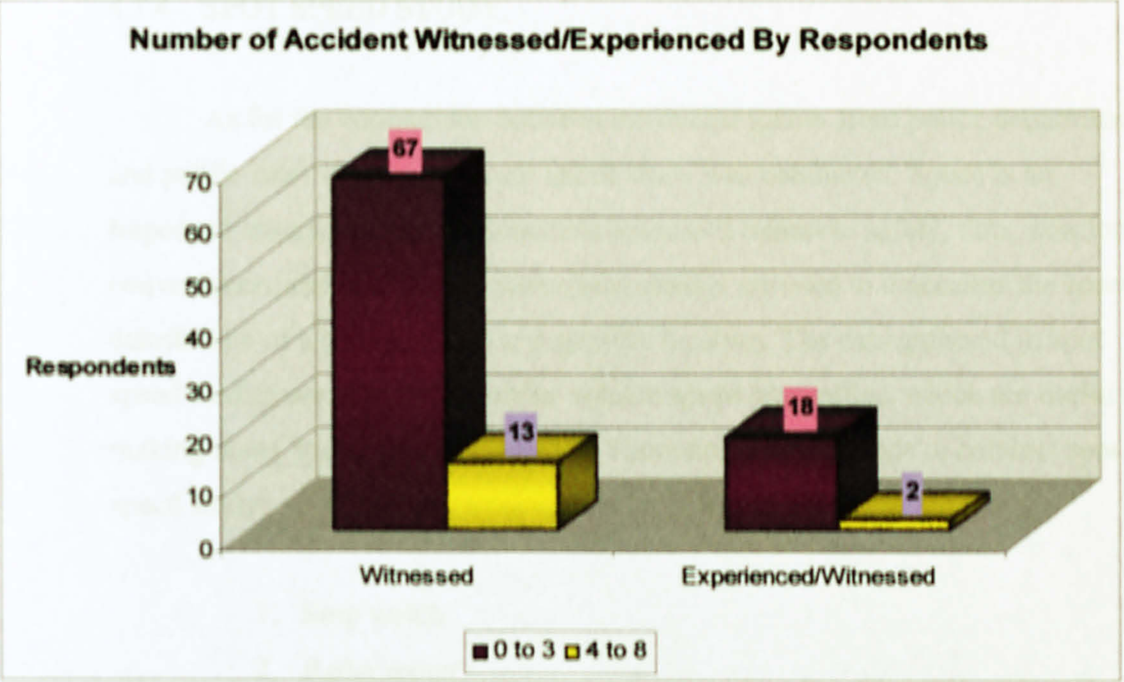

Figure 21: Number of accident witnessed and experienced by respondents

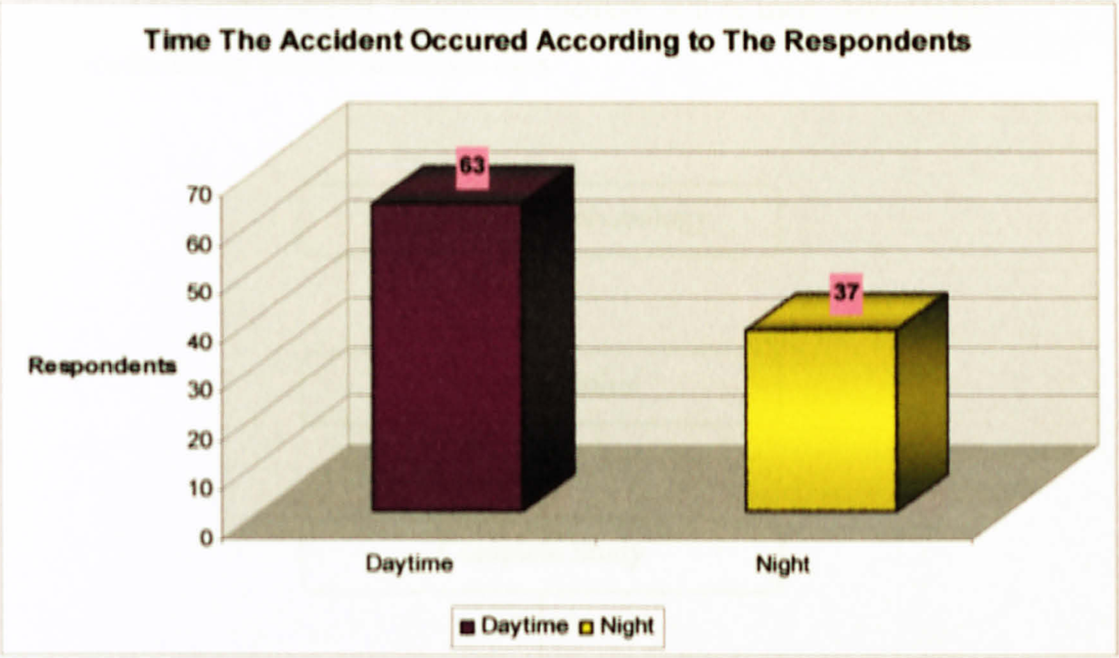

Figure 22: Time the accident occurred according to the respondents

4.1.4 SPOT SPEED STUDY

As for the comparison between the results gather from police department and public work department, spot speed study was conducted. Speed is an important transportation consideration because it relates to safety, time, comfort, convenience, and economics. Spot speed studies are used to determine the speed distribution of a traffic stream at a specific location. The data gathered in spot speed studies are used to determine vehicle speed percentiles, which are useful in making many speed-related decisions. There are three methods to conduct spot speed study;

1. Stop watch
2. Radar meter
3. Pneumatic road tube method

For this project, radar meter methods will be used. Below is the methodology used to obtain the data.

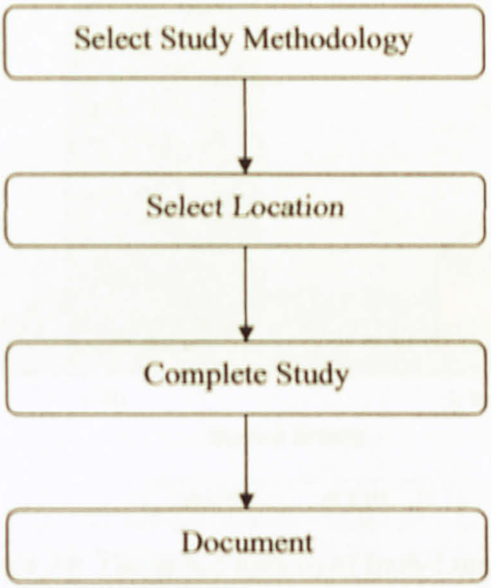

Figure 23: Flow Chart of Spot Speed Study Methodology

The spot speed study was conducted on thursday as it is the most suitable time to do the study besides tuesday and wednesday. The road chosen for this study is F5 (Ipoh-Lumut highway) and the posted speed is 90km/h. The forms and results of the spot speed study were attached in the appendix (see Appendix 4-7). The result obtained had been analyzed and bar charts were made. The spot speed conducted both ways, Ipoh to Lumut (see Figure 24) and Lumut to Ipoh (see Figure 25). The speed data were taken from 160 vehicles.

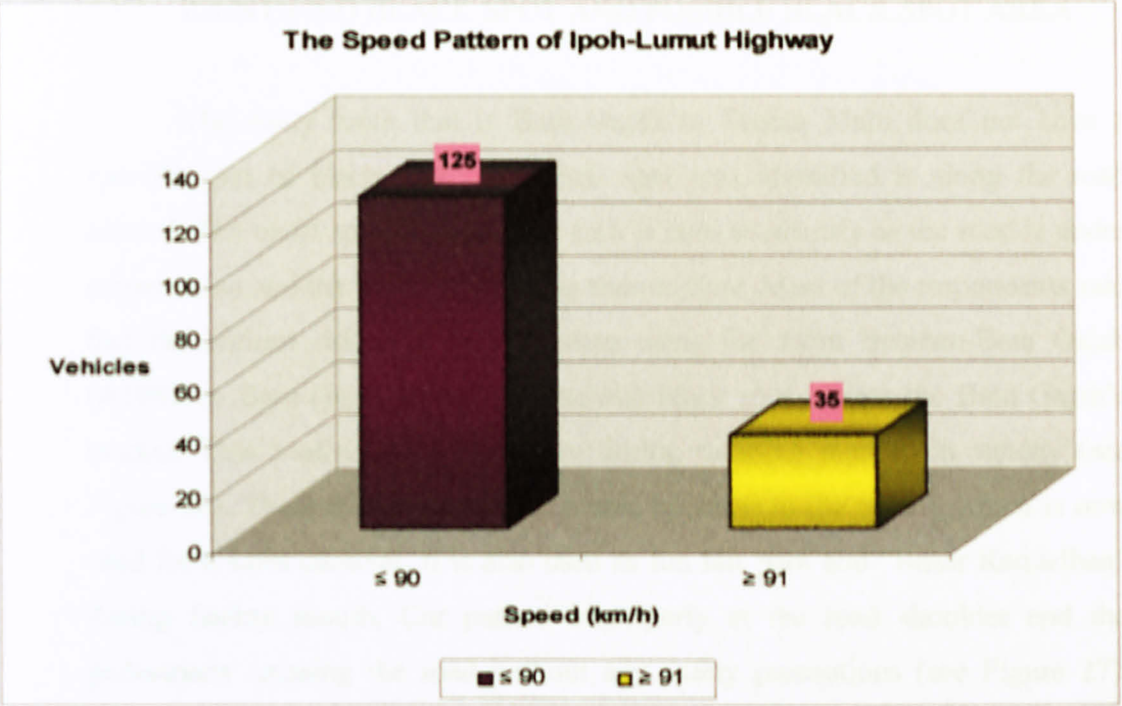

Figure 24: The speed pattern of Ipoh-Lumut highway

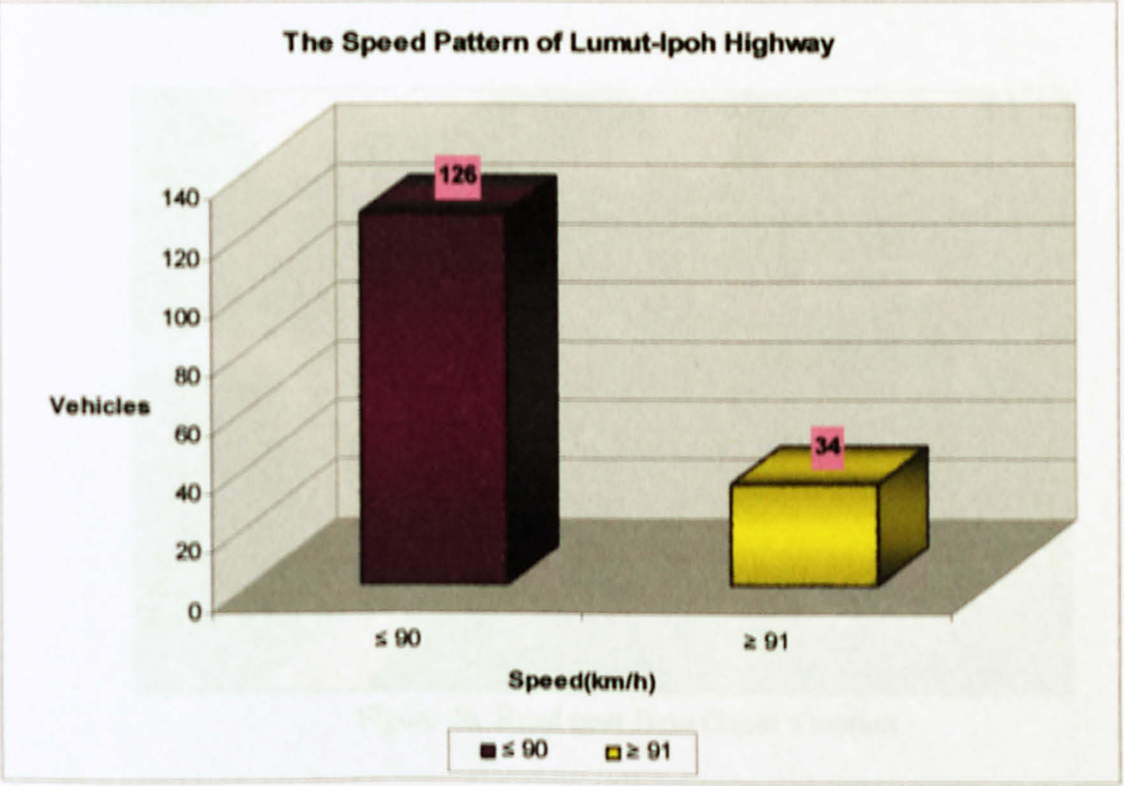

Figure 25: The speed pattern of Lumut-Ipoh highway

4.1.5 IDENTIFIED BLACK SPOT AND POSIBLE BLACK SPOT AREA

The study route that is Batu Gajah to Taman Maju does not have a specific spot of black spot. The black spot area identified is along the road instead. The exact spot of black spot area is hard to identify as the road is under construction and the threat is changing time to time. Most of the respondents said that the highest risk they face is when using the Jalan Bemban-Batu Gajah (A108). In Batu Gajah town, the potential black spot is near the Batu Gajah's market. This road is busy especially during morning market on sunday (see Figure 26). There is also a wide open area opposite to the market which is now used for a sales carnival. It is also used as fun fair park and "Bazar Ramadhan" during fasting month. Car parked improperly at the road shoulder and the pedestrians crossing the road without any safety precautions (see Figure 27). Another possible black spot area is a steep road near Changkat Military Camp (see Figure 28). There is no proper sign that warned the road users about the road conditions.

Figure 26: Road near Batu Gajah's market

Figure 27: Pedestrian crossing road without proper safety precautions

Figure 28: Steep road near Changkat Military Camp

4.1.6 FACTORS CONTIBUTES TO BLACK SPOT

Along the study route (Batu Gajah to Taman Maju), there are four (4) major factors that contributes to black spot. The factors are:

1. Variables factors
2. Traffic factors
3. Permanent accident causing factors
4. Demographics factors

4.1.6.1 VARIABLES FACTORS

The variables factors along the study route are road constructions and lighting. Road constructions along Jalan Bemban-Batu Gajah (A108) and Ipoh-Lumut highway (F5) take a long time to be completed. The road construction's major problems are road signs and safety precaution. In Figure 29, the construction workers are not wearing any safety equipments such as reflector vest. There is no road sign to warn user about the ongoing constructions.

Figure 29: Road construction's workers are not wearing proper personal protection equipment (PPE)

The waste from constructions are not cleaned and disposed properly causing threat to road users especially motorists (see Figure 30). They also left their equipment after the construction's finished (see Figure 31).

Figure 30: Waste from constructions were not cleaned and disposed properly

Figure 31: Road constructions equipment left after construction's finished and become threat to road users

The variables factors that affected the study road are not only consist of road constructions. It also affected by poor lighting. At least over 3km stretch, there are no lamp post exists (see Figure 32). This poorly lighted road can be really dangerous especially during night.

Figure 32: No existence of lamp post

4.1.6.2 TRAFFIC FACTORS

Traffic factors for the study route are no proper road signs especially at the road intersections. In Figure 33, there are no traffic lights at the flyover's intersection and no proper road sign. While taking the pictures of Figure 33, there is a car that gets into the wrong lane. This is a serious incident and can cause to road accident. The lane along Jalan Bemban-batu Gajah that is under constructions is also confusing. There are two different two lane two way road side by side (see Figure 34a and 34b). Animals also become one of the factors that can cause accidents (see Figure 35). The cones used as temporary divider is road users (see Figure 36).

Figure 33: No existence of traffic lights at the road intersection

Figure 34a: Confusing lane at Jalan Bemban-Batu Gajah route

Figure 34b: Confusing lane at Jalan Bemban-Batu Gajah route

Figure 35: Animals are threat to road users especially during night

Figure 36: Cones that are used as temporary divider are not supervised

4.1.6.3 PERMANENT ACCIDENT CAUSING FACTORS

The permanent accident causing factors are the factors that are beyond road users' control. There are two permanent factors along the study route. The first one is at the flyover's intersection where a barrier built and it distracted driver's vision (see Figure 37). The car in the circle can not see vehicles that coming from direction A. The second permanent factor is the traffic light at the intersections in Taman Maju. There are eyewitness saw several collisions at the intersection. Most of the driver's are not aware of the existence of traffic lights at the intersection (see Figure 38).

Figure 37: The driver's vision distracted by the flyover's barrier

Figure 38: Traffic lights at Taman Maju intersection

4.1.6.4 DEMOGRAPHICS FACTORS

According to the police department, the main factors causing accident along study route are driver's behaviors. They disregard the traffic rules, speeding as the Ipoh-Lumut highway is wide and smooth (see Figure 39), passing unsafely and also changing lane without proper signals. From the questionnaires data gathered, 54% of their ages are between 15 to 34 years old (see Figure 17). At this age, they are usually prone to act without thinking about the consequences. They also have lack of driving experience and impatient.

Figure 39: Ipoh-Lumut highway

4.1.7 HANDLING BLACK SPOT

Handling black spot area and to keep it as desired is hard to be implemented. However, there are several actions can be taken to reduce the risk and accident along the study route. The actions that can be taken are:

1) Proper road signs installation.

   Road signs are important especially to new road users and for the under construction's road where the traffic direction changing often. At the steep road near the Changkat Military Camp, road signs to warn road user should be set up.

2) General expansion of road based treatment.

   Road treatment such as shoulder sealing, rest area upgrade, audible edge lining, cat eyes and night time delineation should be set up immediately.

3) Road management.

   Separations of road users such as center barriers, pedestrian precincts, and bike or motorists lane can be effective actions in reducing road accident. A zebra crossing should be put at the Batu Gajah's market intersection. That way, pedestrians can cross the roads safely. Contractors should be responsible to clean and make clearance of the roadside hazards.

4) Safety precautions.

   The road construction's workers should be supply with proper personal protection equipment (PPE) such as reflector vest, safety helmet and safety shoes.

5) Improved road user behavior.

Good behavior on the road and while driving can save a lot of life. Road safety and awareness program is one of the way to educate the road users of how important the safety precautions are. The "Street Smarts Programme" by Petronas is one of the best examples in educating road users as it for school children which is the most suitable age to educate about road safety.

4.2 DISCUSSION

However, the working questionnaires and data analysis must also have some barrier to face. As being plan, the first part of the project that is the first semester of FYP were dedicated in planning, analyzing, designing and developing the study and questionnaires itself. On the other hands, the feedback on the questionnaires will be used to decide the best way on how to handle the area identified along Batu Gajah to Taman Maju route. During this semester, the data from the questionnaires were analyzed and the result interpretation of the data used to help in identified the black spot area and also to identify the factors causing accident.

An effective accident data was five years accidents data, which means for this project it should be from the year 2003 until recent date. However, because of some circumstances, the data obtained from the PDRM was only for a year time period. The data gathered from JKR however will not be used in this project because the data is different from the one that taken from Batu Gajah's Police Department. Since the JKR itself took the accidents data from police department, only the data from police department are used.

The specific spot of black spot location along study road can not be identified as there is no detail route map for the study route. The exact road section is unknown and the black spot area only can be determined as overall road stretch. This study can not be considered as effective as the data collected from Public Work Department (JKR) is not a detailed data as expected. The data from police department also not really effective as they do not give the permission to see the POL 27 form which got detailed information about the accident.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

As for the conclusion, this project is now finished and hopefully, the objectives of this project were able to be achieved by analyzing the result of questionnaire survey.

As mentioned in the early document, the objective of this project are identifying the characteristics of area that can be considered as black spot area and find ways how to overcome and prevent the cause of accident at the identified black spot area. Hopefully, after this project conducted, the number of black spot along the study route decreased.

From the methodology aspects, this project has been using survey-based methodology. The effectiveness of using this methodology because its often best way to access research questions, very widely used and survey based data everywhere. Moreover, comparing with the previous project will also help author to develop more functional project.

The questionnaires had been successfully distributed and the data also analyzed. The data gathered from police department and Public Work Department also had been analyzed and all the data were already compared to determine the black spot area and decide the best way to handle the black spot area.

5.2 RECOMMENDATION

Since the main part of this study will be based on the questionnaires result, it is highly recommend that the questionnaires design will be created based on some constrains so that the reliable and practicable result will produce. The method of survey, sample of populations and question design itself are the most important factors that need to take care during this development stage.

Hopefully the Public Work department or Jabatan Kerja Raya (JKR) can provide a detail map as they are in charge for the road maintenances and constructions.

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APPENDIX

“Mengenalpasti dan Menangani Black Spot dalam Kejuruteraan Pengangkutan (Laluan Batu Gajah ke Taman Maju)”

BORANG KAJI SELIDIK

1) Umur :

____

2) Jantina:

____

3) Di manakah tempat tinggal anda?

____

4) Adakah anda: (sila tandakan ☑ di dalam kotak yang disediakan)

☐ Masih belajar

☐ Bekerja (jika YA, sila ke soalan 7)

☐ Suri rumah (jika YA, sila ke soalan 8)

5) Apakah jenis kursus yang anda ambil ?

____

6) Apakah pusat pengajian anda?

____

7) Di manakah tempat anda bekerja?

____

8) Apakah jenis kenderaan yang anda miliki/pandu?

____

9) Berapa kerap anda menggunalan jalan Batu Gajah ke Taman Maju route dalam seminggu? (sila tandakan ☑ di dalam kotak yang disediakan)

☐ Sekali seminggu

☐ 2 ke 5 kali seminggu

☐ Lebih dari 5 kali seminggu

10) Berapa lamakah masa yang anda ambil dari tempat anda tinggal ke Batu Gajah?

____

Terima Kasih!

Naizatul Akmal Abdullah

Department of Civil Engineering

UNIVERSITI
TEKNOLOGI
PETRONAS

“Identifying and Handling Black Spot in Transportation Engineering (Batu Gajah to Taman Maju Route)”

SURVEY FORM

1) Age :

____

2) Gender:

____

3) Where do you stay now?

____

4) Are you: (please ☑ in the box provided)

- ☐ Still study
- ☐ Working (if YES, jump to question 7)
- ☐ House wife (if YES, jump to question 8)

5) What course did you take?

____

6) Which institution that you attend?

____

7) Where do you work?

____

8) What kind of vehicles that you have/drive?

____

9) How often do you use Batu Gajah to Taman Maju route in a week?
(please ☑ in the box provided)

- ☐ Once a week
- ☐ Twice to 5 times a week
- ☐ More than 5 times a week

10) How long did you take from your house/place to Batu Gajah?

____

Thank you!

Naizatul Akmal Abdullah

Department of Civil Engineering

UNIVERSITI
TEKNOLOGI
PETRONAS

"Identifying and Handling Black Spot in Transportation Engineering (Batu Gajah to Taman Maju Route)"

---

1) Age/Umur :

____

2) Gender/Jantina :

☐ Male/Lelaki ☐ Female/Perempuan

3) Do you have a driving license/Adakah anda mempunyai lesen memandu?

☐ Yes/Ya ☐ No/Tidak

4) What type of driving license that you have/Apakah jenis lesen memandu yang anda miliki?

☐ L ☐ Permanent
☐ P

5) Do you had witnessed or experienced any accident along the road from Batu Gajah to Taman Maju / Pernahkah anda menyaksikan atau mengalami kemalangan di sepanjang jalan dari Batu Gajah ke Taman Maju?

Witnessed/Menyaksikan :	Experienced/Mengalami :
☐ Yes/Ya	☐ Yes/Ya
☐ No/Tidak	☐ No/Tidak

6) How many accidents had you witnessed/experienced before/Berapa banyakkah kemalangan yang anda saksikan/terlibat?

Witnessed/Menyaksikan: ____________ Experienced/Mengalami :____________

7) What time did the accident(s) occurred/Pada waktu manakah kemalangan itu berlaku?

☐ Daytime/Siang ☐ Time/Masa :____________________
☐ Night/Malam ☐ Time/Masa :____________________

SPOT SPEED STUDIES

NAME OF ROAD : IPOH-LUMUT HIGHWAY (R5) DIRECTION : LUMUT TO IPOH

POSTED SPEED : 90 kph DAY : ~~THURSDAY~~ DATE : ~~13 MARCH 2008~~ WEATHER : [✓ Fine]/Cloudy/Rain

ENUMERATOR : ______ GROUP NO. : ______ SHEET NO. : 1 OF 2

VEHICLE NO.	SPEED (kph)
1	79
2	85
3	84
4	91
5	62
6	84
7	50
8	65
9	99
10	84
11	86
12	99
13	66
14	87
15	88
16	99
17	105
18	75
19	74
20	62

VEHICLE NO.	SPEED (kph)
21	74
22	62
23	54
24	88
25	89
26	99
27	98
28	103
29	101
30	96
31	74
32	62
33	98
34	84
35	86
36	74
37	72
38	76
39	88
40	91

VEHICLE NO.	SPEED (kph)
41	84
42	70
43	108
44	74
45	62
46	74
47	64
48	65
49	67
50	69
51	68
52	73
53	72
54	69
55	65
56	55
57	53
58	50
59	62
60	56

VEHICLE NO.	SPEED (kph)
61	99
62	74
63	62
64	86
65	108
66	96
67	94
68	98
69	102
70	74
71	72
72	84
73	86
74	87
75	83
76	62
77	76
78	88
79	50
80	75

WORK SHEET : LAB 2

SPOT SPEED STUDIES

NAME OF ROAD : IPOH-LUMUT HIGHWAY (R5) DIRECTION : LUMUT TO IPOH

POSTED SPEED : 90 kph DAY : ~~THURSDAY~~ DATE : ~~13 MARCH 2008~~ WEATHER : [✓ Fine]/Cloudy/Rain

ENUMERATOR : ____ GROUP NO. : ____ SHEET NO. : 2 OF 2

VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)
81	76	101	71	121	80	141	95
82	81	102	59	122	68	142	71
83	80	103	52	123	103	143	59
84	88	104	84	124	71	144	82
85	59	105	85	125	59	145	103
86	80	106	95	126	71	146	92
87	47	107	94	127	61	147	90
88	62	108	99	128	62	148	94
89	95	109	97	129	64	149	98
90	80	110	92	130	66	150	71
91	82	111	71	131	65	151	69
92	95	112	59	132	70	152	80
93	63	113	94	133	69	153	82
94	83	114	80	134	66	154	83
95	84	115	82	135	62	155	79
96	95	116	71	136	53	156	59
97	100	117	69	137	51	157	73
98	72	118	73	138	47	158	84
99	71	119	84	139	59	159	47
100	59	120	88	140	54	160	72

SPOT SPEED STUDIES

NAME OF ROAD : IPOH-LUMUT HIGHWAY (R5) DIRECTION : LUMUT TO IPOH

POSTED SPEED : 90 kph DAY : THURSDAY DATE : 13 MARCH 2008 WEATHER : [✓ Fine]/Cloudy/Rain

ENUMERATOR : GROUP NO. : SHEET NO. : 1 OF 2

VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)
1	79	21	74	41	84	61	99
2	85	22	62	42	70	62	74
3	84	23	54	43	108	63	62
4	91	24	88	44	74	64	86
5	62	25	89	45	62	65	108
6	84	26	99	46	74	66	96
7	50	27	98	47	64	67	94
8	65	28	103	48	65	68	98
9	99	29	101	49	67	69	102
10	84	30	96	50	69	70	74
11	86	31	74	51	68	71	72
12	99	32	62	52	73	72	84
13	66	33	98	53	72	73	86
14	87	34	84	54	69	74	87
15	88	35	86	55	65	75	83
16	99	36	74	56	55	76	62
17	105	37	72	57	53	77	76
18	75	38	76	58	50	78	88
19	74	39	88	59	62	79	50
20	62	40	91	60	56	80	75

SPOT SPEED STUDIES

NAME OF ROAD : IPOH-LUMUT HIGHWAY (R5) DIRECTION : IPOH TO LUMUT

POSTED SPEED : 90 kph DAY : ~~THURSDAY~~ DATE : ~~13 MARCH 2008~~ WEATHER : [✓ Fine]/Cloudy/Rain

ENUMERATOR : GROUP NO. : SHEET NO. : 2 OF 2

VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)	VEHICLE NO.	SPEED (kph)
81	88	101	81	121	89	141	56
82	77	102	83	122	56	142	78
83	66	103	92	123	89	143	87
84	55	104	67	124	76	144	65
85	89	105	89	125	71	145	76
86	90	106	93	126	70	146	69
87	99	107	98	127	80	147	83
88	100	108	92	128	90	148	92
89	102	109	99	129	8	149	90
90	45	110	95	130	76	150	91
91	67	111	67	131	56	151	82
92	68	112	89	132	65	152	87
93	78	113	76	133	61	153	75
94	98	114	54	134	73	154	68
95	76	115	78	135	83	155	69
96	56	116	78	136	94	156	78
97	87	117	90	137	65	157	65
98	67	118	76	138	76	158	73
99	89	119	88	139	67	159	80
100	56	120	67	140	89	160	60

No.	Detail \ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.1 Literature research on identifying population methods 1.2 Identifying population along study route	■							Mid-Semester Break							
2	2.1 Gathering accident data and black spot area (PDRM and JKR) 2.2 Data analyzing 2.3 Weekly meeting		■													
3	3.1 Detail work on questionnaires design (based on pilot survey FYP1) 3.2 Designing questionnaires 3.3 Weekly meeting			■												
4	4.1 Submission of progress report 1 4.2 Submission of logbook				■											
5	5.1 Literature research on spot speed study, volume study and traffic counting 5.2 Weekly meeting					■										
6	6.1 Conduct spot speed study, volume study and traffic counting 6.2 Data analyzing						■	■								
7	7.1 Submission of progress report 2 7.2 Submission of logbook 7.3 Questionnaire distribution									■						
8	8.1 Analyzing the result gather from questionnaire distribute 8.2 Preparation for poster exhibition										■					
9	9.1 Poster exhibition											■				
10	10.1 Compare all data for final result												■			

11	11.1 Submission of dissertation (soft bound) 11.2 Submission of logbook													■		
12	12.1 Oral presentation														■	
13	13.1 Submission of project dissertation															■

LALUAN : FT 05

BULAN	SEKYEN																															
	SEMPADAN					JLN RABA/PARIT										BATU GAJAH/LAHAT									MENGLEMBU							
	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706
JANUARY										1						1	1		1													
FEBRUARY																																
MARCH																																
APRIL																																
MAY																																
JUNE																			1								1	1	1			
JULY																																
AUGUST																					1	1								1		
SEPTEMBER																							1			1						
OCTOBER																									1							
NOVEMBER																						2	1									
DECEMBER																																
JUMLAH										1						1	1		2		1	3	2		1	1	1	1	1	1		

BULAN	SEKSYEN																															
	JELAPANG																															
	707	708	709	710																												
JANUARY																																
FEBRUARY																																
MARCH																																
APRIL																																
MAY			1																													
JUNE																																
JULY																																
AUGUST																																
SEPTEMBER																																
OCTOBER																																
NOVEMBER																																
DECEMBER																																
JUMLAH			1																													

CATATAN ■ Maut

▨ maut dan kemalangan

SALINAN YANG DIAKUI SAH

STATISTIK LAPORAN KEMALANGAN (POL 27) MENGIKUT SEKSYEN BAGI DAERAH KINTA TAHUN 2007

LALUAN : FT 05

BULAN	SEKYEN																															
	SEMPADAN					JLN RABA/PARIT										BATU GAJAH/LAHAT									MENGLEMBU							
	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706
JANUARY										■ 1						■ 1	1		■ 1													
FEBRUARY																																
MARCH																																
APRIL																																
MAY																																
JUNE																			■ 1								1	1	1			
JULY																																
AUGUST																					■ 1	■ 1								1		
SEPTEMBER																							■ 1			■ 1						
OCTOBER																									■ 1							
NOVEMBER																						▨ 2	■ 1									
DECEMBER																																
JUMLAH										1						1	1		2		1	3	2		1	1	1	1	1	1		

BULAN	SEKSYEN																															
	JELAPANG																															
	707	708	709	710																												
JANUARY																																
FEBRUARY																																
MARCH																																
APRIL																																
MAY			■ 1																													
JUNE																																
JULY																																
AUGUST																																
SEPTEMBER																																
OCTOBER																																
NOVEMBER																																
DECEMBER																																
JUMLAH			1																													

CATATAN ■ Maut

▨ maut dan kemalangan

SALINAN YANG DIAKUI SAH

b.p. Jurutera Daerah
JKR Kinta Ipoh

AJUK : KEMALANGAN MENGIKUT NO. LALUAN

YARAT : TIADA

EMPOH : 01/01/2007 HINGGA 31/12/2007 (MENGIKUT TARIKH PENGADUAN)

O. LALUAN (E3)		KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
999	LAIN-LAIN	0	0	0	2	0	2	0
0001	JALAN JELAPANG - CHEMOR(.....	11	4	20	383	80	498	7
0002	JALAN IPOH - LUMUT(..........	5	1	10	289	39	344	5
0005	JALAN LAHAT	4	6	7	341	61	419	9
0008	JALAN GOPENG - BATU GAJAH(...	0	1	0	5	1	7	0
0013	JALAN TG. RAMBUTAN / CHEMOR(.	0	2	1	17	3	23	0
0106	JALAN LAHAT/SIMPANG PULAI	0	1	1	41	4	47	0
0160	JALAN CHEMOR / JALONG(.......	0	0	0	4	2	6	0
0181	JALAN KERAMAT PULAI	11	0	3	291	42	347	2
0182	JALAN INTAKE / PASUKAN GERAK	0	0	0	18	1	19	1
0183	JALAN TG RAMBUTAN	0	0	0	9	3	12	0
0184	JALAN PASIR PUTEH(...........	4	1	6	403	70	484	4
0185	JALAN BERCHAM-TG RAMBUTAN	5	0	13	327	57	402	4
186	POS SLIM	0	1	0	2	0	3	0
0001	KM. LEBUHRAYA UTARA SELATAN	11	4	9	627	111	762	10
0002	JALAN TUNKU ABDUL RAHMAN(....	10	4	26	591	63	694	8
0003	JALAN SULTAN AZLAN SHAH UTARA	5	2	11	355	76	449	4
0004	JALAN SULTAN AZLAN SHAH(.....	1	1	3	133	24	162	1
0006	JALAN RAJA DR.NAZRIN SHAH(...	7	3	10	653	97	770	9
0007	JALAN SULTAN AZLAN SHAH SELAT	0	0	0	22	5	27	0
0008	JALAN KUALA KANGSAR (.....F)	1	0	0	42	40	83	0
0101	JALAN SILIBIN	1	3	3	158	23	188	4
0103	JALAN LABROOY	0	1	0	15	2	18	0
0104	JALAN TUN ABDUL RAZAK	4	1	3	110	16	134	2
0105	JALAN PERHENTIAN	0	0	0	28	4	32	2
0106	JALAN DATOK	0	0	0	18	1	19	0
0107	JALAN DATOK MAHARAJA LELA	0	0	0	6	0	6	0
0108	JALAN DATOK SAGOR	0	0	0	5	0	5	0
0109	JALAN PANGLIMA BUKIT GANTANG	1	2	1	146	23	173	6
0110	JALAN RAJA MUSA AZIZ	2	0	2	159	15	178	11
0112	JALAN BIJIH TIMAH	0	0	0	16	4	20	0
0113	JALAN BANDAR TIMAH	0	0	0	12	1	13	0
0115	JALAN HABIB ABDULLAH	0	0	0	1	0	1	0
0116	JALAN HASSAN	0	0	1	9	1	11	0
0117	JALAN KOMPLEKS ISLAM	0	0	0	16	3	19	0
0118	JALAN KHOO CHONG KONG	0	0	0	6	1	7	0
0120	JALAN S.P. SEENIVASAGAM	0	0	0	22	4	26	0
0122	JALAN TUN SAMBANTHAN	0	0	0	11	0	11	0
0123	JALAN ST JOHN	0	0	0	11	2	13	0
0124	JALAN TUN PERAK	0	0	0	19	6	25	1
0127	TAMAN MERDEKA	1	0	0	1	0	2	0
0129	TAMAN CHERRY	0	0	0	2	0	2	0
0130	TAMAN KINTA HEIGHT	0	0	0	1	0	1	0

SALINAN YANG DIAKUI SAH

b.p. Jurutera Daerah
JKR Kinta Ipoh

JUK : KEMALANGAN MENGIKUT JENIS PENGGUNA YANG DISYAKI DISALAHKAN

ARAT : TIADA

MPOH : 01/01/2008 HINGGA 29/02/2008 (MENGIKUT TARIKH KEJADIAN)

IS PENGGUNA (J)	KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
OKAR/WAGON	1	5	4	39	0	49	1
OSIKAL KURANG 251CC	1	1	14	9	0	25	2
I TRELER/BALAK/TANKER	0	0	0	1	0	1	0
I (BDM MELEBIHI 2.50 TAN)	0	0	2	4	0	6	0
I (BDM KURANG 2.51 TAN)	0	0	1	0	0	1	0
HENTI-HENTI	0	0	0	0	0	0	1
SEKOLAH	0	0	1	0	0	1	0
	0	0	0	2	0	2	0
/PICKUP/LAND ROVER	0	0	0	3	0	3	0
IKAL	1	0	0	0	0	1	0
AK BERKENAAN	1	1	2	2	0	6	0
AK PASTI	0	0	3	35	0	38	0
LAH	4	7	27	95	0	133	4

JUK : KEMALANGAN MENGIKUT JENIS PENGGUNA YANG DISYAKI DISALAHKAN

ARAT : TIADA

MPOH : 01/01/2007 HINGGA 31/12/2007 (MENGIKUT TARIKH KEJADIAN)

IS PENGGUNA (J)	KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
OKAR/WAGON	8	1	26	285	0	320	1
OSIKAL KURANG 251CC	12	3	37	66	0	118	0
OSIKAL MELEBIHI 250CC	0	0	0	1	0	1	0
I TRELER/BALAK/TANKER	3	0	1	11	0	15	1
I (BDM MELEBIHI 2.50 TAN)	0	0	5	20	0	25	1
I (BDM KURANG 2.51 TAN)	0	0	0	16	0	16	0
EKSPRES	0	0	0	0	0	0	1
PESIARAN	0	0	0	1	0	1	0
HENTI-HENTI	0	0	0	3	0	3	0
SEKOLAH	0	0	1	0	0	1	0
	0	0	0	8	0	8	0
/PICKUP/LAND ROVER	0	0	0	11	0	11	0
SI/KERETA SEWA	0	1	0	1	0	2	0
IKAL	0	0	1	2	0	3	0
ALAN KAKI	1	0	5	2	0	8	1
-LAIN	0	0	0	2	0	2	0
AK BERKENAAN	3	3	10	23	0	39	2
AK PASTI	0	0	0	142	0	142	0
LAH	27	8	86	594	0	715	7

JUK : KEMALANGAN MENGIKUT NO. LALUAN

RAT : TIADA

MPOH : 01/01/2007 HINGGA 31/12/2007 (MENGIKUT TARIKH KEJADIAN)

	LALUAN (E3)	KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
	JALAN LAMA IPOH - PARIT	1	0	0	1	0	2	0
5	JALAN BATU GAJAH - KG. GAJAH	4	0	7	47	0	58	0
8	JALAN BEMBAN - BT. GAJAH ✓	1	0	2	25 +2	0	28	0
2	BALI - TG. TUALANG	1	0	1	10	0	12	1
7	BT. GAJAH - CANGKAT LARANG	1	0	0	24	0	25	1
8	JALAN SG. DURIAN TG. TUALANG	0	0	0	1	0	1 174	0
	JALAN PUSING - BATU GAJAH - ✓	4	3	18	112	0	137	0
0	JALAN KG. TIMAH - TRONOH MINE	0	0	0	2	0	2	0
8	JALAN PAPAN - PUSING	0	0	1	4	0	5	0
9	BATU GAJAH - CHANGKAT TIN	0	1	2	5	0	8	0
	JALAN GOPENG - BATU GAJAH	0	0	9	42	0	51	1
5	SI PUTEH - PARIT	0	1	1	4	0	6	0
15	JALAN BEMBAN - BT. GAJAH	0	0	0 +1	1	0	1	0
05	JALAN IPOH - LUMUT	11 +1	3	25 +7	181 +24	0	220	2
1	JALAN CHANGKAT	0	0	1	7	0	8 251	0
2	JALAN KELAB	0	0	0	3	0	3	0
3	JALAN PANDAK AKHAT	0	0	0	5	0	5	0
4	LORONG MAT SAMAN	1	0	0	3	0	4	0
5	JALAN MTD	0	0	3	2	0	5	0
6	JALAN TMN TASEK/JUTARIA	0	0	0	8	0	8	0
9	LAIN-LAIN JALAN	3	0	10	95	0	108	2
0	JALAN DEWANGSA	0	0	4	8	0	12	0
ZZ	TIDAK PASTI	0	0	2	4	0	6	0
LAH		27	8	86	594	0	715	7

JUK : KEMALANGAN MENGIKUT NO. LALUAN

ARAT : TIADA

MPOH : 01/01/2008 HINGGA 29/02/2008 (MENGIKUT TARIKH KEJADIAN)

LALUAN (E3)		KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
5	JALAN BATU GAJAH - KG. GAJAH	1	1	1	8	0	11	1
8	JALAN BEMBAN - BT. GAJAH	0	0	0	2	0	2	0
2	BALI - TG. TUALANG	1	0	0	2	0	3	0
7	BT. GAJAH - CANGKAT LARANG	0	0	1	1	0	2	0
	JALAN PUSING - BATU GAJAH -	1	4	6	26	0	37	0
0	JALAN KG. TIMAH - TRONOH MINE	0	0	0	1	0	1	0
8	JALAN PAPAN - PUSING	0	1	1	3	0	5	0
	JALAN GOPENG - BATU GAJAH	0	0	1	8	0	9	0
15	JALAN BEMBAN - BT. GAJAH	0	0	1	0	0	1	0
05	JALAN IPOH - LUMUT	1	0	7	24	0	32	2
1	JALAN CHANGKAT	0	1	0	0	0	1	0
3	JALAN PANDAK AKHAT	0	0	0	1	0	1	0
4	LORONG MAT SAMAN	0	0	1	2	0	3	0
6	JALAN TMN TASEK/JUTARIA	0	0	1	2	0	3	0
9	LAIN-LAIN JALAN	0	0	7	14	0	21	1
0	JALAN DEWANGSA	0	0	0	1	0	1	0
LAH		4	7	27	95	0	133	4

JUK : KEMALANGAN MENGIKUT JENIS JALAN

ARAT : TIADA

MPOH : 01/01/2008 HINGGA 29/02/2008 (MENGIKUT TARIKH KEJADIAN)

NIS JALAN(E2)	KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG	BUKAN KMLG
LAN PERSEKUTUAN	1	0	8	24	0	33	2
LAN NEGERI	3	6	10	49	0	68	1
LAN BANDARAN	0	1	9	17	0	27	1
N-LAIN	0	0	0	5	0	5	0
MLAH	4	7	27	95	0	133	4

JUK : KEMALANGAN MENGIKUT JENIS JALAN

ARAT : TIADA

MPOH : 01/01/2007 HINGGA 31/12/2007 (MENGIKUT TARIKH KEJADIAN)

NIS JALAN(E2)	KMLG MAUT	KMLG PARAH	KMLG RINGAN	KMLG ROSAK SHJ	TIDAK PASTI	JUMLAH KMLG		BUKAN KMLG
LAN PERSEKUTUAN	11+1	4	28+8	187+24	0	230	263	2
LAN NEGERI	11+5	4+6	40+10	270+49	0	325	373	3
LAN BANDARAN	4	0+1	18+7	108+17	0	130	157	2
N-LAIN	1	0	0	29+5	0	30	35	0
MLAH	27	8	86	594	0	715		7

UK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

RAT : E2-02

POH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN	NO. LALUAN	NO. SEKSYEN	LONGITUDE	LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
	JALAN IPOH - LUMUT	FT005	R10 LN166/			01/01/2007 12:30	S59598	K000003/2007
	JALAN IPOH - LUMUT	FT005	R10 LN166/			03/01/2007 12:30	S111382	K000004/2007
	KM12 JALAN IPOH-LUMUT	FT005	R10 LN166/			07/01/2007 19:30	S111382	K000015/2007
	KM 16 JALAN IPOH - LUMUT	FT005	R6(1) LN 1			08/01/2007 12:50	S59598	K000018/2007
	BT 3,JLN SIPUTEH/PARIT	FF073	RTI			08/01/2007 20:30	S88195	K000023/2007
	JALAN IPOH - LUMUT	FT005	R10 LN166/			12/01/2007 18:20	S59598	K000036/2007
	KM 19 JALAN IPOH LUMUT	FT005	R10 LN166/			12/01/2007 18:30	S59598	K000038/2007
	KM 24 JALAN IPOH - LUMUT	FT005	R10 LN166/			14/01/2007 18:35	S92475	K000040/2007
	KM 12 JALAN IPOH - LUMUT	FT005	R10 LN166/			16/01/2007 21:30	S59598	K000048/2007
	KM 12 JLN IPOH LUMUT	FT005	S43(1)(A)			17/01/2007 08:00	S59598	K000050/2007
	JALAN PARIT BT.GAJAH	FF073	RTI			17/01/2007 23:05	S92475	K000056/2007
	JALAN IPOH - LUMUT	FT005	R10 LN166/			20/01/2007 20:10	S88195	K000061/2007
	km 15 JALAN IPOH - LUMUT	FT005	S41(1)(C)			21/01/2007 18:20	I15796	K000067/2007
4	KM 16 JALAN IPOH - LUMUT	FT005	R10 LN166/			21/01/2007 18:30	S92475	K000068/2007
5	KM 15 JALAN IPOH LUMUT	FT005	R10 LN166/			22/01/2007 15:30	S88195	K000075/2007
6	JALAN LAMA IPOH - PARIT	FF073	R10 LN166/			25/01/2007 17:00	S59598	K000092/2007

UK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

RAT : E2=02

POH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L. LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
KM 18 JALAN IPOH - LUMUT FT005	R10 LN166/	27/01/2007 06:00	S92475	K000096/2007
JALAN IPOH - LUMUT KM 19 FT005	R3(2)(b) L	28/01/2007 08:40	S59598	K000103/2007
KM 11 JALAN IPOH LUMUT FT005	RTI	29/01/2007 00:15	S59598	K000106/2007
KM 25 JALAN IPOH - LUMUT FT005	RTI	08/02/2007 08:50	S111382	K000132/2007
KM 19 JALAN IPOH LUMUT FT005	R10 LN166/	09/02/2007 10:45	S88195	K000137/2007
KM 14 JLN IPOH LUMUT FT005	RTI	09/02/2007 14:00	I15796	K000139/2007
KM 28 JALAN IPOH LUMUT FT005	RTI	11/02/2007 02:45	S111382	K000147/2007
KM 25 JALAN IPOH - LUMUT FT005	S43(1)(A)	12/02/2007 00:35	S59598	K000149/2007
KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	12/02/2007 08:30	S88195	K000150/2007
KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	12/02/2007 14:15	S88195	K000152/2007
KM 24 JALAN IPOH - LUMUT FT005	S43(1)(A)	12/02/2007 14:30	I15796	K000154/2007
KM 25 JALAN IPOH - LUMUT FT005	R10 LN166/	12/02/2007 20:10	S88195	K000157/2007
KM 18.JALAN IPOH - LUMUT FT005	RTI	13/02/2007 05:30	S88195	K000159/2007
JALAN IPOH - LUMUT FT005	S43(1)(A)	13/02/2007 08:25	S59598	K000162/2007
KM 21 JALAN IPOH LUMUT FT005	RTI	14/02/2007 13:30	S88195	K000168/2007
JALAN PARIT KE SIPUTEH FF073	R3(2)(b) L	15/02/2007 08:40	S59598	K000172/2007

UK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

RAT : E2=02

POH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN	NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
	KM 25. JALAN IPOH - LUMUT	FT005	R10 LN166/	16/02/2007 20:10	S88195	K000187/2007
	KM 24 JALAN IPOH LUMUT	FT005	R10 LN166/	17/02/2007 15:15	S59598	K000191/2007
	KM 17 JALAN IPOH-LUMUT	FT005	R10 LN166/	17/02/2007 18:40	S59598	K000196/2007
	KM 12 JALAN IPOH - LUMUT	FT005	R10 LN166/	19/02/2007 14:45	S92475	K000202/2007
	KM 13.JALAN IPOH - LUMUT	FT005	S43(1)(A)	19/02/2007 16:15	S92475	K000205/2007
	KM.20 JALAN IPOH - LUMUT	FT005	R10 LN166/	20/02/2007 20:15	S59598	K000210/2007
	KM 12 JALAN IPOH - LUMUT	FT005	R10 LN166/	20/02/2007 21:15	S59598	K000213/2007
	TRAFIK LIGHT KM 13 JLN.IPOH LUMUT	FT005	R10 LN166/	21/02/2007 15:40	S92475	K000221/2007
	KM 19 JALAN IPOH LUMUT	FT005	S43(1)(A)	22/02/2007 22:00	S111382	K000226/2007
	KM 25 JALAN IPOH - LUMUT	FT005	S43(1)(B)	26/02/2007 19:00	S111382	K000233/2007
	LAMPU ISYARAT KM 13 JLN IPOH-LUMUT	FT005	R10 LN166/	03/03/2007 08:45	S92475	K000246/2007
	KM 21.5 JALAN IPOH - LUMUT	FT005	R10 LN166/	03/03/2007 21:00	S92475	K000251/2007
	SIMPANG PAPAN-PUSING	FF073	R10 LN166/	04/03/2007 11:00	S111382	K000253/2007
	JALAN IPOH - LUMUT KM 24	FT005	R10 LN166/	08/03/2007 16:00	S59598	K000269/2007
	KM 17.JALAN IPOH - LUMUT	FT005	S43(1)(B)	11/03/2007 05:00	S59598	K000280/2007
	KM 21 JALAN IPOH - LUMUT	FT005	R3(2)(b) L	11/03/2007 22:15	S59598	K000284/2007

UK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

RAT : E2=02

POH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
KM 26.JALAN IPOH - LUMUT FT005	S43(1)(A)	15/03/2007 08:20	S88195	K000302/2007
JALAN IPOH - LUMUT FT005	S43(1)(A)	16/03/2007 14:00	S59598	K000305/2007
JALAN IPOH - LUMUT FT005	S43(1)(A)	16/03/2007 12:15	S59598	K000306/2007
JALAN PARIT-SIPUTEH FF073	S43(1)(A)	20/03/2007 14:30	S59598	K000313/2007
LAMPU ISYARAT KM 13 JLN IPOH LUMUT FT005	S43(1)(A)	20/03/2007 17:30	S59598	K000315/2007
KM 22 JLN IPOH - LUMUT FT005	R10 LN166/	23/03/2007 18:00	S59598	K000319/2007
KM 12 JALAN IPOH LUMUT FT005	R10 LN166/	25/03/2007 20:45	S59598	K000325/2007
KM 25 JALAN IPOH - LUMUT FT005	R10 LN166/	26/03/2007 15:30	S92475	K000330/2007
JALAN IPOH - LUMUT FT005	S41(1)(A)	31/03/2007 21:20	I15796	K000341/2007
KM 23 JALAN IPOH - LUMUT FT005	R10 LN166/	02/04/2007 08:15	S92475	K000346/2007
KM 26 JALAN IPOH LUMUT FT005	R10 LN166/	03/04/2007 11:30	S88195	K000350/2007
JALAN IPOH - LUMUT(KM 15) FT005	R10 LN166/	06/04/2007 14:48	S88195	K000356/2007
TRAFIK LIGHT KM 13 JALAN IPOH - LUMUT FT005	R10 LN166/	09/04/2007 16:30	S59598	K000366/2007
JALAN IPOH - LUMUT FT005	R10 LN166/	10/04/2007 14:30	S88195	K000370/2007
JALAN IPOH - LUMUT(LAMPU ISYARAT KM 15) FT005	R10 LN166/	10/04/2007 19:00	S88195	K000372/2007
KM 26 JALAN IPOH LUMUT FT005	RTI	11/04/2007 20:45	S92475	K000376/2007

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	 NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
	KM 12. JALAN IPOH - LUMUT FT005	 S41(1)(A)	20/04/2007 13:15	I15796	K000392/2007
	KM 13.JALAN IPOH - LUMUT FT005	 R10 LN166/	20/04/2007 15:15	S88195	K000396/2007
	SIMPANG LALUAAN SIPUTIH FT005	 R10 LN166/	23/04/2007 08:00	S88195	K000401/2007
	JALAN IPOH - LUMUT FT005	 S41(1)(A)	26/04/2007 11:30	I15796	K000409/2007
	JALAN IPOH LUMUT KM 12 FT005	 R10 LN166/	26/04/2007 12:00	S88195	K000410/2007
	KM.25 JALAN IPOH - LUMUT FT005	 RTI	28/04/2007 01:30	S92475	K000416/2007
	JALAN IPOH - LUMUT KM 12 FT005	 R10 LN166/	29/04/2007 00:30	S88195	K000419/2007
	KM.24.5 JLN IPOH/LUMUT FT005	 R10 LN166/	01/05/2007 07:30	S92475	K000423/2007
	KM 12.JALAN IPOH - LUMUT FT005	 RTI	01/05/2007 14:00	S59598	K000427/2007
	KM13 JLN.IPOH LUMUT FT005	 RTI	04/05/2007 01:35	S92475	K000436/2007
	KM 20 JALAN IPOH - LUMUT FT005	 R10 LN166/	05/05/2007 15:00	S59598	K000440/2007
	KM.24JALAN IPOH - LUMUT FT005	 S41(1)(B)	07/05/2007 23:00	I15796	K000447/2007
	KM 20 JALAN IPOH - LUMUT FT005	 S43(1)(A)	09/05/2007 01:20	S59598	K000451/2007
2	KM 24.5 JALAN IPOH - LUMUT FT005	 S43(1)(A)	09/05/2007 09:30	S92475	K000452/2007
3	km 24 jalan ipoh lumut FT005	 R10 LN166/	12/05/2007 09:45	S92475	K000464/2007
4	TRAFIK LIGHT KM 13 JLN.IPOH LUMUT FT005	 R10 LN166/	12/05/2007 18:30	S92475	K000467/2007

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
5	KM 20 JALAN IPOH - LUMUT FT005	R6(1) LN 1	17/05/2007 14:00	S59598	K000473/2007
7	KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	17/05/2007 17:15	S59598	K000476/2007
8	TRAFIK LIGHT. JALAN IPOH - LUMUT FT005	S41(1)(B)	17/05/2007 20:45	I15796	K000479/2007
9	KM 17 JALAN IPOH - LUMUT FT005	S43(1)(A)	21/05/2007 07:45	S92475	K000488/2007
0	16 JALAN IPOH - LUMUT FT005	S43(1)(A)	21/05/2007 14:00	S92475	K000490/2007
1	KM 16 JALAN IPOH - LUMUT FT005	R10 LN166/	23/05/2007 08:15	S59598	K000495/2007
2	KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	28/05/2007 10:30	S59598	K000508/2007
3	KM 25 JALAN IPOH - LUMUT FT005	R10 LN166/	29/05/2007 16:00	S88195	K000514/2007
4	KM 20 JALAN IPOH - LUMUT FT005	S43(1)(A)	30/05/2007 17:35	S92475	K000518/2007
5	KM 24 SPG TRONOH JALAN IPOH - LUMUT FT005	S43(1)(A)	30/05/2007 20:00	S92475	K000519/2007
6	KM 26 JALAN IPOH - LUMUT FT005	R3(2)(b) L	02/06/2007 17:30	S92475	K000528/2007
7	KM.14.JALAN IPOH - LUMUT FT005	R10 LN166/	03/06/2007 17:30	S59598	K000533/2007
8	JALAN IPOH - LUMUT KM 17 FT005	R10 LN166/	10/06/2007 15:00	S59598	K000551/2007
99	KM 19 JALAN IPOH - LUMUT FT005	R10 LN166/	11/06/2007 09:45	S111382	K000555/2007
00	KM 20 JALAN IPOH - LUMUT FT005	R10 LN166/	14/06/2007 13:30	S111382	K000565/2007
01	KM 20 JALAN IPOH - LUMUT FT005	R10 LN166/	14/06/2007 16:10	S111382	K000568/2007

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
3	KM 13.5 JLN. IPOH - LUMUT FT005	R10 LN166/	18/06/2007 07:30	S111382	K000575/2007
4	KM. 13 JALAN IPOH - LUMUT FT005	R10 LN166/	18/06/2007 09:40	S92475	K000577/2007
5	KM 11 JLN IPOH LUMUT FT005	R10 LN166/	19/06/2007 16:30	S59598	K000581/2007
6	KM 17 JALAN IPOH - LUMUT FT005	R10 LN166/	21/06/2007 09:30	S92475	K000592/2007
7	JALAN IPOH - LUMUT KM 21 FT005	RTI	23/06/2007 21:30	S111382	K000602/2007
8	KM 19 JLN IPOH LUMUT FT005	S43(1)(A)	24/06/2007 09:00	S92475	K000607/2007
9	JALAN IPOH - LUMUT FT005	S43(1)(A)	27/06/2007 19:20	S59598	K000613/2007
0	KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	27/06/2007 20:10	S92475	K000616/2007
1	KM 27 JALAN IPOH - LUMUT FT005	R3(2)(b) L	28/06/2007 09:30	S92475	K000618/2007
2	KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	29/06/2007 08:25	S59598	K000626/2007
3	KM 25 JALAN IPOH - LUMUT FT005	R3(2)(b) L	29/06/2007 08:05	S59598	K000627/2007
4	KM 26 JALAN IPOH LUMUT FT005	R10 LN166/	30/06/2007 19:40	S92475	K000640/2007
5	KM 26 JALAN IPOH LUMUT FT005	R10 LN166/	01/07/2007 17:00	S59598	K000641/2007
6	KM. 16 JALAN IPOH - LUMUT FT005	RTI	01/07/2007 22:30	S92475	K000649/2007
7	KM 21 JALAN IPOH LUMUT FT005	R10 LN166/	04/07/2007 09:05	S92475	K000651/2007
8	JALAN IPOH LUMUT FT005	R10 LN166/	04/07/2007 03:00	S92475	K000654/2007

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

IL	LOKASI KEJADIAN	NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
0	KM 24 JALAN IPOH - LUMUT	FT005	R10 LN166/	05/07/2007 17:30	S59598	K000660/2007
1	KM.27JALAN IPOH - LUMUT	FT005	R10 LN166/	06/07/2007 17:40	S92475	K000668/2007
2	KM 12 JALAN IPOH - LUMUT	FT005	R17(A) LN1	08/07/2007 16:10	S92475	K000670/2007
3	KM 13 JALAN IPOH - LUMUT	FT005	R10 LN166/	09/07/2007 22:30	S111382	K000676/2007
4	JALAN IPOH - LUMUT	FT005	S43(1)(A)	14/07/2007 17:30	S92475	K000695/2007
5	KM25 JALAN IPOH - LUMUT	FT005	R10 LN166/	16/07/2007 01:00	S92475	K000697/2007
6	KM11.5 JALAN IPOH - LUMUT	FT005	R10 LN166/	16/07/2007 18:50	S92475	K000699/2007
7	JALAN IPOH - LUMUT KM 17	FT005	RTI	17/07/2007 01:00	S92475	K000701/2007
8	17 JALAN IPOH - LUMUT	FT005	R94 LN 170	17/07/2007 11:30	S59598	K000702/2007
9	17 JALAN IPOH - LUMUT	FT005	RTI	16/07/2007 01:30	S92475	K000703/2007
0	KM 25 JALAN IPOH - LUMUT	FT005	R10 LN166/	18/07/2007 21:20	S92475	K000709/2007
1	KM 25 JALAN IPOH - LUMUT	FT005	RTI	22/07/2007 23:30	S92475	K000721/2007
2	KM 13 TARFIK LIGHT JLN IPOH LUMUT	FT005	R10 LN166/	25/07/2007 08:00	S92475	K000737/2007
33	21 JALAN IPOH - LUMUT	FT005	S43(1)(A)	25/06/2007 20:30	S59598	K000746/2007
34	KM. 25 JALAN IPOH - LUMUT	FT005	S41(1)(A)	27/07/2007 17:10	I15796	K000748/2007
35	JALAN IPOH - LUMUT KM 27	FT005	RTI	26/07/2007 07:25	S92475	K000756/2007

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
7	KM29 JALAN IPOH LUMUT FT005	R10 LN166/	04/08/2007 14:30	S59598	K000777/2007
8	KM 21 JALAN IPOH - LUMUT FT005	R10 LN166/	05/08/2007 15:00	S88195	K000781/2007
9	KM 26 JALAN IPOH - LUMUT FT005	S43(1)(A)	04/08/2007 02:40	S59598	K000790/2007
0	JALAN IPOH - LUMUT KM 13 LAMPU ISYARAT FT005	R10 LN166/	08/08/2007 08:40	S88195	K000793/2007
1	KM 18 JALAN IPOH - LUMUT FT005	R10 LN166/	08/08/2007 20:10	S88195	K000796/2007
2	KM 21 JALAN IPOH - LUMUT FT005	R3(2)(b) L	11/08/2007 17:00	S92475	K000802/2007
3	JALAN IPOH - LUMUT KM 19 FT005	S43(1)(A)	13/08/2007 12:15	S111382	K000807/2007
4	JALAN IPOH - LUMUT KM 26 FT005	R17(C) LN1	18/08/2007 13:42	S92475	K000824/2007
5	KM 27 JALAN IPOH - LUMUT FT005	S41(1)(A)	19/08/2007 01:15	I15796	K000826/2007
6	JALAN IPOH - LUMUT KM 25 FT005	R10 LN166/	19/08/2007 23:15	S88195	K000832/2007
7	JALAN IPOH - LUMUT KM 25 FT005	R10 LN166/	19/08/2007 22:40	S88195	K000833/2007
8	KM 12 JALAN IPOH - LUMUT FT005	NOD	20/08/2007 10:42	S92475	K000834/2007
9	JALAN IPOH - LUMUT KM 12 FT005	R10 LN166/	21/08/2007 18:45	S88195	K000850/2007
0	JALAN IPOH - LUMUT KM 12 FT005	S43(1)(A)	01/08/2007 17:30	S92475	K000852/2007
1	KM 25.5 JALAN IPOH - LUMUT FT005	R3(2)(b) L	23/08/2007 08:00	S92475	K000856/2007
2	JALAN IPOH - LUMUT FT005	R10 LN166/	23/08/2007 14:55	S88195	K000858/2007

UK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

RAT : E2=02

POH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN	NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
	KM 17. JALAN IPOH - LUMUT	FT005	R10 LN166/	25/08/2007 15:30	S88195	K000864/2007
	JALAN IPOH - LUMUT KM 18	FT005	R10 LN166/	28/08/2007 08:15	S88195	K000873/2007
	JALAN IPOH - LUMUT	FT005	R10 LN166/	27/08/2007 18:30	S59598	K000876/2007
	KM 13 JALAN IPOH LUMUT	FT005	R10 LN166/	30/08/2007 16:10	S59598	K000878/2007
	KM. 21 JALAN IPOH - LUMUT	FT005	R10 LN166/	30/08/2007 18:45	S59598	K000880/2007
	KM. 12 JALAN IPOH - LUMUT	FT005	R10 LN166/	01/09/2007 17:40	S59598	K000888/2007
	KM 11 JLN.IPOH LUMUT	FT005	RTI	01/09/2007 18:00	S88195	K000889/2007
	KM 11 JALAN IPOH LUMUT	FT005	R10 LN166/	01/09/2007 18:45	S88195	K000890/2007
	KM 25 JALAN IPOH LUMUT	FT005	RTI	04/09/2007 14:30	S59598	K000899/2007
	KM 25 JALAN IPOH - LUMUT	FT005	S43(1)(A)	07/09/2007 06:50	S88195	K000904/2007
	SIMPANG BANDAR SRI PENGKALAN-LAHAT	FT005	R10 LN166/	07/08/2007 19:00	S59598	K000906/2007
	KM 13 JALAN IPOH LUMUT	FT005	R10 LN166/	06/09/2007 21:45	S88195	K000910/2007
	TRAFIK LIGHT KM.13 JALAN IPOH - LUMUT	FT005	R10 LN166/	09/09/2007 14:00	S59598	K000913/2007
	KM 12 TRAFIK LIGHT JALAN IPOH - LUMUT	FT005	S43(1)(A)	12/09/2007 16:30	S92475	K000927/2007
8	KM.26.5 JALAN IPOH - LUMUT	FT005	R10 LN166/	13/09/2007 16:55	S88195	K000930/2007
9	KM 26 JALAN IPOH - LUMUT	FT005	S43(1)(A)	20/09/2007 08:30	S59598	K000946/2007

FT005 S43(1)(A).

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
1	KM 21 JALAN IPOH - LUMUT FT005	R3(2)(b) L	24/09/2007 06:45	S59598	K000955/2007
2	JALAN PARIT-SIPUTEH FT005	RTI	24/09/2007 07:45	S111382	K000957/2007
3	KM 19 JALAN IPOH LUMUT FT005	RTI	24/09/2007 16:40	S111382	K000958/2007
4	JALAN IPOH - LUMUT FT005	R10 LN166/	26/09/2007 15:15	S59598	K000967/2007
5	JALAN IPOH - LUMUT KM 15 FT005	R10 LN166/	29/09/2007 05:30	S59598	K000977/2007
6	KM 15 JALAN IPOH - LUMUT FT005	S43(1)(A).	29/09/2007 15:30	S88195	K000984/2007
7	KM.12 JALAN IPOH - LUMUT FT005	S43(1)(A).	02/10/2007 00:30	S111382	K000992/2007
8	KM13 JALAN IPOH LUMUT FT005 E101 01.017'	S43(1)(A). N 04 29.395'	08/09/2007 16:20	S63684	K001012/2007
9	KM. 21 JALAN IPOH - LUMUT FT005	R10 LN166/	09/10/2007 10:00	S59598	K001016/2007
0	KM 24 JALAN IPOH - LUMUT FT005	R3(2)(b) L	09/10/2007 15:58	S59598	K001019/2007
1	KM26 JLN.IPOH LUMUT FT005	RTI	10/10/2007 01:10	S59598	K001021/2007
2	SIMPANG TAMAN MEDAN PUSING FT005	R3(2)(b) L	11/10/2007 11:00	S63684	K001027/2007
3	LAMPU ISYARAT.JALAN PAPAN - PUSING FT005	S43(1)(A).	12/10/2007 16:40	S59598	K001029/2007
4	KM 26.JALAN IPOH - LUMUT FT005	S41(1)(A).	12/10/2007 18:45	I15796	K001030/2007
5	BT 1 PARIT/SIPUTEH. F005	R10 LN166/	13/10/2007 21:30	S63684	K001034/2007
6	DIJAMBATAN SG SELINSING (TRONOH) FT005	S43(1)(A).	15/10/2007 19:00	S59598	K001047/2007

	FT005	R10 LN166/			

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
8	KM.17 JALAN IPOH - LUMUT FT005 E101 00.377'	S43(1)(A) N 04 28.889'	16/10/2007 12:50	S63684	K001051/2007
9	PUSING - SI PUTEH F005	S43(1)(A)	15/10/2007 18:45	S59598	K001052/2007
0	KM 12.5 JALAN IPOH - LUMUT FT005	R10 LN166/	17/10/2007 10:30	S92475	K001056/2007
1	KM 24 JALAN IPOH - LUMUT FT005	R10 LN166/	17/10/2007 18:00	S92475	K001058/2007
2	JALAN IPOH - LUMUT FT005	S43(1)(A)	18/10/2007 12:45	S59598	K001062/2007
3	JALAN IPOH - LUMUT FT005	S43(1)(A)	18/10/2007 18:40	S59598	K001069/2007
4	KM 25 JALAN IPOH - LUMUT FT005	R3(2)(b) L	18/10/2007 19:20	S59598	K001070/2007
5	JALAN IPOH - LUMUT LAMPU ISYARAT KM 12 FT005	S43(1)(A)	21/10/2007 09:45	S59598	K001077/2007
6	KM 14 JALAN IPOH - LUMUT T/LIGHT FT005	R10 LN166/	22/10/2007 02:10	S59598	K001082/2007
97	KM12.5 JALAN IPOH - LUMUT FT005	R10 LN166/	23/10/2007 12:30	S92475	K001089/2007
98	KM27 JALAN IPOH - LUMUT FT005	S41(1)(A)	23/10/2007 18:00	I/16940	K001091/2007
99	KM 19 JALAN IPOH - LUMUT FT005	R10 LN166/	26/10/2007 11:30	S92475	K001104/2007
00	KM 12 JALAN IPOH - LUMUT FT005	S43(1)(A)	30/10/2007 15:30	S59598	K001118/2007
01	JALAN IPOH - LUMUT KM 26 FT005	R10 LN166/	03/11/2007 20:10	S63684	K001132/2007
02	JALAN IPOH - LUMUT KM 14 LAMPU ISYARAT FT005	S43(1)(A)	03/11/2007 20:45	S63684	K001134/2007
03	KM.19.5JALAN IPOH - LUMUT FT005	RTI	07/11/2007 23:00	S92475	K001148/2007

FT005 RTI

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

L	LOKASI KEJADIAN NO. LALUAN LONGITUDE	 NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
5	KM 12 JALAN IPOH - LUMUT FT005	 R10 LN166/	15/11/2007 14:50	S63684	K001168/2007
6	KM 20 JALAN IPOH - LUMUT FT005	 R10 LN166/	20/11/2007 07:55	S63684	K001190/2007
7	TRAFIK LIGHT KM 19 JALAN IPOH - LUMUT FT005 E100 59.764'	 S43(1)(A) N 04 28.043'	20/11/2007 20:00	S63684	K001194/2007
8	JALAN IPOH - LUMUT LAMPU IYARAT KM 14 FT005	 R10 LN166/	21/11/2007 08:50	S92475	K001195/2007
9	KM 17 JALAN IPOH - LUMUT FT005	 R10 LN166/	24/11/2007 13:10	S92475	K001214/2007
0	JALAN IPOH - LUMUT FT005	 R10 LN166/	24/11/2007 20:15	S92475	K001217/2007
1	SI PUTEH - PARIT F005	 S43(1)(A)	25/11/2007 02:30	I15796	K001218/2007
2	KM 18 JLN IPOH LUMUT FT005	 R17(C) LN1	26/11/2007 19:30	S63684	K001222/2007
3	km.19 ALAN IPOH - LUMUT FT005	 R10 LN166/	30/11/2007 15:20	S92475	K001231/2007
4	KM 17 JALAN IPOH - LUMUT FT005	 R10 LN166/	01/12/2007 23:15	S63684	K001241/2007
5	KM 14 JLN IPOH LUMUT FT005	 S43(1)(A)	02/12/2007 14:30	S92475	K001244/2007
6	TRAFIK LIGHT KM 14 JALAN IPOH - LUMUT FT005	 R10 LN166/	02/12/2007 21:50	S92475	K001249/2007
7	JALAN IPOH - LUMUT KM 13.5 FT005	 R10 LN166/	03/12/2007 13:20	S63684	K001252/2007
18	KM 3 JLN JLN PARIT SIPUTIH F005	 R10 LN166/	03/12/2007 19:30	S63684	K001254/2007
19	KM 18 JALAN IPOH LUMUT FT005	 R10 LN166/	04/12/2007 01:30	S63684	K001256/2007
20	KM 17 JALAN IPOH - LUMUT FT005	 S43(1)(A)	05/12/2007 19:20	I15796	K001270/2007

FT005 R10 LN166/

JUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

ARAT : E2=02

MPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

IL	LOKASI KEJADIAN NO. LALUAN LONGITUDE	NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
22	KM JALAN IPOH - LUMUT FT005	R10 LN166/	08/12/2007 11:30	S92475	K001279/2007
3	KM 17.5 JALAN IPOH - LUMUT FT005	R3(2)(b) L	08/12/2007 12:50	S92475	K001281/2007
4	KM 20 JALAN IPOH LUMUT FT005	S43(1)(A) .	08/12/2007 07:40	S92475	K001283/2007
5	KM 26 JALAN IPOH LUMUT FT005	S43(1)(A) .	10/12/2007 08:00	S92475	K001290/2007
6	SIMPANG BALI FT005	R3(2)(b) L	12/12/2007 07:45	S92475	K001297/2007
7	KM18 JALAN IPOH LUMUT FT005	S43(1)(A) .	17/12/2007 13:05	S59598	K001308/2007
28	KM 24 JALAN IPOH LUMUT FT005	RTI	19/12/2007 05:40	S63684	K001311/2007
29	TRAKIK LIGHT KM 19 JALAN IPOH LUMUT FT005	S43(1)(A) .	22/12/2007 18:30	S63684	K001323/2007
30	JALAN IPOH - LUMUT FT005	S336 KK	24/12/2007 21:50	I15796	K001339/2007
31	KM 13 JLN.IPOH LUMUT FT005	S43(1)(A) .	30/12/2007 15:00	S92475	K001350/2007
32	KM 13 JALAN IPOH - LUMUT FT005	S43(1)(A) .	01/01/2008 07:50	S59598	K000001/2008
33	KM. 17 JALAN IPOH - LUMUT FT005	RTI	31/12/2007 19:10	S92475	K000002/2008
234	KM 16 JLN IPOH LUMUT FT005 E101 00.807'	S43(1)(A) . N 04 28.961'	04/01/2008 07:30	S63684	K000010/2008
235	KM 14 JALAN IPOH - LUMUT FT005	R10 LN166/	10/01/2008 13:15	S59598	K000016/2008
236	KM14 JALAN IPOH LUMUT FT005	S336 KK	19/01/2008 01:10	I15796	K000037/2008
237	SIMPANG MASUK KILANG-JALAN BEMBAN FF315	S43(1)(A) .	21/01/2008 18:00	S63684	K000041/2008

FT005 R10 LN166/

AJUK : KEMALANGAN MENGIKUT LOKASI KEJADIAN

YARAT : E2=02

EMPOH : 01/01/2007 HINGGA 01/02/2008 (MENGIKUT TARIKH KEJADIAN)

IL	LOKASI KEJADIAN NO. LALUAN LONGITUDE	 NO. SEKSYEN LATITUDE	TARIKH / MASA KEJADIAN	IO/AIO	NO. RPT 1
39	KM 25 JALAN IPOH - LUMUT FT005	 R10 LN166/	21/01/2008 17:40	S59598	K000046/2008
40	JALAN IPOH - LUMUT FT005	 RTI	24/01/2008 00:30	S63684	K000057/2008
41	KM 15.5 JALAN IPOH LUMUT FT005	 S43(1)(A) .	26/01/2008 09:50	S63684	K000068/2008
42	km 18 JALAN IPOH - LUMUT FT005	 S43(1)(A) .	28/01/2008 16:30	S59598	K000077/2008
43	KM 18 JALAN IPOH LUMUT FT005	 R10 LN166/	01/02/2008 10:15	S63684	K000089/2008
44	KM 17 JLN IPOH LUMUT FT005	 S43(1)(A) .	01/02/2008 20:00	S63684	K000095/2008